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ABSTRACT

The seven papers in this report were prepared as part of a project intended to open a dialogue between leaders of higher education and aging communities, and were originally developed as background material for an invitational meeting between these groups. The first three papers deal with broad issues in which both communities share an interest. The papers are: "Higher Education and Older Adults in the 21st Century (1990-2010): Who Will Be Learning? Who Should Be Learning?" (Solomon Arbeiter); "Financing Higher Education Over a Lifetime" (Arthur M. Hauptman); and "Higher Education and Aging communities: Natural Allies in a Changing World" (John M. Cornman). The second set of three papers focuses more on how higher education can pursue its missions of teaching, research, and public service in an aging society. The papers are: "Gerontology and Higher Education: Continuing To Open the American Mind" (George L. Maddox); "Responsibilities of Higher Education to Research on Aging" (Richard C. Adelman); "The Third University Mission: To Serve Older Adults" (David G. Brown) focuses on the universities' role in public service. A final paper (by Pamela Cristoffel) offers a data summary on age, the workplace, implications for higher education, and education of older adults now and in the future. An appendix lists names and addresses of contributors and participants in the conference that inspired this publication. Individual papers include references. (JB)

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Higher Education and an Aging Society

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Higher Education and an Aging Society

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1989

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Preface

The projected growth of the nation's older population is well documented. According to the U.S. Bureau of the Census, the number of persons 65 and over will increase from 31 million to 51 million in the next 30 years.

This increase, alone, will raise major retirement income and health care issues. However, the impacts of an aging population stretch far beyond meeting, for example, the long term care needs of older people. The aging of the labor force will affect work place arrangements and the availability of caregivers. Demand for older workers and improved health status of persons in their 60s and 70s may force us to change definitions of "old age," "retirement," "productive activities," and "life-long learning."

Equally important, responses to the aging of the population must be worked out in the context of and will affect responses to a host of other basic societal trends: the growing number of children in poverty; changes in the organization and activities of families; the aging of public infrastructures, industries, institutions, and the environment; and the development of a world economy.

The inter-relatedness of all these trends means that the aging of the population will impact almost every aspect of society, perhaps none more than higher education. The quality of our responses to aging-related issues will be determined, in part, by how higher education pursues its traditional missions of teaching, research, and public service. In turn, the responses adopted will affect future public support and resources for higher education.

For higher education, the issues go well beyond questions of faculty retirement, attracting senior citizens to campus, and/or competing with programs serving older people for public resources. For those concerned with the quality of life and opportunities for future cohorts of older people, the issues involve far more than courses for older people and competition for public resources. Indeed, it would seem that the higher education and aging interest groups should be allies on a number of basic issues.

The papers in this report were prepared as part of a project, funded by the Administration on Aging, intended to begin a dialogue between leaders of higher education and aging communities. The first three papers deal with broad issues in which both communities should share an interest. The second set of three papers explores how higher education might pursue its missions of teaching, research, and public service in an aging society.

The papers were developed first as background material for an invitational meeting between leaders of the two communities. The meeting was hosted by the American Council on Education, the American Association for Retired Persons, and The Gerontological Society of America. The meeting was conducted as an informal exchange of views and reactions, with no formal conclusions sought or taken.

The meeting was moderated by Joseph L. Fisher, Ph.D., who brought the unique combination of perspectives of a former member of the U.S. Congress; a former member of a governor's cabinet; a teacher, researcher, and administrator in higher education; and a senior citizen. Dr. Fisher presents some reactions to the meeting in his introduction to the report.

The Gerontological Society of America thanks the Administration on Aging for its support for the project. We also express our appreciation for the assistance of Robert Atwell, President, and Arthur Hauptman, of ACE, and of Horace Deets, Executive Director, Anne Harvey, Director, Program and Field Service Division, and Sandra Sweeney, of AARP, for their support, advice and participation.

In distributing this report, we seek to encourage and expand the dialogue between these two important communities with a large and common stake in our society's responses to the challenges of an aging society.

Of course, the views expressed in this report are those of the authors and not necessarily those of any of the participating organizations, participants in the meeting or members of the project advisory committee.

Carol Ann Schutz
Deputy Director
The Gerontological Society of America

1989
Washington, D.C.

Introduction

Joseph L. Fisher, PhD
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Political Economy and
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In a world characterized by diversity, change, uncertainty, and confusion, plus a good deal of conflict, it is natural for individuals and groups to look for allies. Only by bringing together a critical mass of more or less like-minded persons is it possible to generate the thrust necessary to achieve policy and program goals. The discovery and development of symbiotic relationships constitute the essence of political power and social action. Does such a relationship exist, even though largely hid from view, between higher education and the aging communities? Jack Cornman in the essay that follows believes it does. All that is needed is that it be brought out into the open. This conference can be thought of as an attempt to start the dialogue between these two communities, between these "natural allies," to use Cornman's phrase, leading to a better understanding of their mutual concerns and laying the groundwork for doing something about them.

Both communities—higher education and aging—are large, influential, and generally well respected. The American Council on Education and the American Association for Retired Persons are but leading examples of organizations already in the field representing constituencies running into the millions of persons and vigorously pursuing agendas that have been developed over the years. Seldom, however, have they joined forces to achieve goals both communities support. This conference and the background papers contained in this volume look into the possibilities for fruitful collaboration.

Together, the higher education and aging communities make a combination that any politician, such as I used to be as a member of Congress, a state cabinet officer, and a county supervisor, would dearly love to have with him in legislative battles. AARP, for example, has some 30 million members and goodness knows how many individuals would be counted as participants and supporters of higher education. The inviting challenge, of course, is to find the shared goals, the overlapping interests, the joint strategies, the common agenda, and the determination to achieve agreed upon objectives.

These matters were explored in the conference. The results were not specific and clearly defined, nor were they intended to be. Rather, the purpose was to reconnoiter

the ground and see what the possibilities for collaboration might be. In this, the conference proved to be stimulating and successful.

A number of concepts worth noting here emerged from the give and take of the discussion. First, it was agreed that a life span approach should be taken in which each individual who is fortunate enough to go the full distance lives through a childhood phase, adolescence, early adulthood, the middle years and finally the older period. Our conference focused on the college/university years—say, from 18 to 22 and on to 30 or so—and the older period from, say, 60 on to the end. The lines between these life span phases are becoming more blurred all the time with higher education becoming a lifetime undertaking, at least off and on, for an increasing number and with the time of retirement more and more being at the option of each individual. Higher education has a responsibility of preparing young people for their entire remaining life span during which most will pursue several different professions or vocations and will live in several different places. The senior adults, on their part, have a stake in seeing that institutions of higher education take account of their situations and needs and, equally, impart to youth some understanding of problems and opportunities they will confront when they are older.

A second concept dealt with in the conference involves a reciprocity of concerns, obligations, and opportunities and is characterized by a special relationship between youth and old age—the grandparent-grandchild connection. This reciprocal relationship has economic and social as well as psychological aspects. For example, older people have a tremendous stake in a well-educated and trained younger work force which will have to pay a large share of the social security tax from which their retirement and health benefits will be paid. Younger people are concerned that their seniors remain productive, healthy, independent, and happy for as long as possible if only to reduce the tax and personal financial burden on them. There seems to be a nice symmetry between the needs and capacities of younger and older persons.

A third concept that was given considerable attention in the conference is that both communities are, or should be, concerned with broad societal issues as well as narrower individual ones, and also with long-range trends and possibilities as well as short-range. Thus, both groups are concerned with drugs, drug-related crime, personal safety, and related matters. Both are concerned with family stability and of preserving, to the extent possible, intergenerational family ties. This is especially true nowadays when so many university students are married and have children. In addition to financial assistance, the older generation can help with child care while the younger generation can help make life for the older ones more useful and pleasant.

Both communities are, or should be, involved with social-economic issues at the broadest level as participating citizens. Policies to reduce the budget deficit, to improve American competitiveness in world markets, to increase private saving and investment, to improve racial and ethnic relations, to promote arms reduction and peace, to raise ethical standards in both government and business, and so on through a long list of importance to both groups. It is simply wrong to assume that the older cohorts are concerned with only their health and pensions or that the younger cohorts limit their horizon to completing their formal schooling, launching careers, and starting families.

Given the many issues in which youth and the elderly have joint interest, and assuming they want to concert their efforts, it will be necessary to set priorities so as not to be operating on too many fronts at once. What should be given attention first? Student loans, national service, long-term care, housing, life-long education, medical research, or what? To establish priorities, as well as the agenda of issues and strategy for dealing with them, some kind of organization will be required, occasional meetings at the minimum. This conference can be a beginning in that direction.

As a former legislator, I know the importance of having advice from groups directly affected. If the advice is thoughtful and not unduly self-serving, so much the better. Especially useful is advice from coalitions of interested parties because they will already have reconciled differences whether of an intergenerational, inter-regional, inter-sectoral, or inter-class nature. I can't imagine a U.S. Senator or Representative, or a state or local elected official, not paying close attention to persons speaking intelligently and responsibly for both higher education and the elderly.

In particular, what are some of the current and foreseeable issues on which the elderly and the higher education groups might cooperate in a practical and effective way? One surely is Medicare. For the short run, a superficial look would find the elderly and young people at odds, with the elderly wanting a cut in the additional contributions they would have to make to support catastrophic coverage and the younger people not wanting the cost laid on them. But in a longer view, youth becomes old age and will want this coverage. And many of the elderly, if they stop to think it through, have to rely on younger persons for contributions to the Medicare fund and should take care not to overburden the younger ones with taxes to the extent they vote the program out. Representatives of the two groups, meeting and talking in congenial circumstances, should be able to compromise their differences and join in advocating a position acceptable to each. If they do get together, their combined political strength would carry the day.

Another example for concerted action would be in support of government loans or other assistance in education. In return for the support of older persons for college loans to younger persons, the latter group could support suitable educational and cultural programs for the former group. A reciprocity treaty between the two, once worked out, would be of advantage all around and, again, could carry the day in national and state legislative bodies.

No doubt there are other possibilities for cooperative action based on mutual advantage such as work programs tailored to the needs of each group. Yet other possibilities exist outside their immediate interests. For example, they might combine in support of environmental, arms reduction, health, airline and highway safety, elementary and secondary education, and research proposals. In the tax field, since both university students and the elderly tend to be in the low income brackets, they obviously share concern that the tax system be progressive.

Perhaps more important than joining to support particular pieces of legislation is joining to originate and frame bills, sometimes coordinating with other groups. Looking back, one can see instances in which the elderly and the higher education forces might have worked together on specific issues and made a difference. The 1986 overhaul of the Social Security program might have been accomplished with much less uncertainty and difficulty had such a consolidation of effort and influence occurred with the attendant reduction in friction between the old and the young. The next time the college loan program comes up for renewal and change, sympathetic support from organizations of the elderly could ease considerably the problems of securing enough votes to ensure passage.

In short, the prospects for cooperation between the two great cohorts, youth and age, appear to be promising on many fronts. Certainly the prospects would justify further talks and explorations between them along lines opened up in the conference reported in this volume.

***Part I: A Common Stake in
Education***

Higher Education and Older Adults in the 21st Century (1990-2010) : Who Will Be Learning? Who Should Be Learning?

Solomon Arbeiter

Associate Director
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"A sane society must provide possibilities for adult education, much as it provides today for the schooling of children.

"For many people the age of thirty or forty is much more appropriate for learning—in the sense of understanding rather than of memorizing."

Erich Fromm

This paper discusses the status of older adult learners and adult learning over the next two decades. Obviously, projections of such long-term nature are modestly speculative and dependent on a variety of demographic, technological, and social trends moving consistently over a long period of time. Depending on international events beyond our control, or public policy that seeks ends different from our current policy, the shape of adult learning in the 21st century may not resemble that described here. However, we intend to delineate, with a clear degree of specificity, those personal and social factors that motivate and create incentives for older individuals (45 to 65 years of age) to pursue learning. More specifically, we intend to project these factors to measure and predict learning by older adults in college. Viewed in a micro sense, the paper will seek to clarify the role of institutions of higher education as a factor in the education and training of older adults as America enters the first decade of the 21st century. Finally, the paper will close with public policy recommendations to enhance the role of colleges in the learning process of older Americans.

Individual Factors

We are aware of those personal factors that lead adults to pursue education, particularly at the college level. The major variables that will be discussed in this paper include

- current educational attainment
- career and job needs
- personal income
- race/ethnicity
- type of career/job.

Let us look at each of these factors as they are reflected in the current adult learning population (primarily the "babyboomers") and project them into the 21st century as a foundation for viewing the need for older adults to pursue learning in college and the ability of colleges to respond to the needs of this constituency in the 21st century. Specifically, will the current "baby boom" generation of adult learners, ranging in age from 25 to 45, require more or less education—and what type of education—as it reaches the 45 to 65 year age range in the opening decade of the 21st century?

Table 1. Selected characteristics of participants in adult education: United States, 1984

(Numbers in thousands)								
Characteristics of participants	Number of adults in population ¹	Participants in adult education ²						
		Total	Full-time students in high school or college degree programs ¹				Not full-time students in high school or college	
			No.	%	No.	%	No.	%
	1	2	3	4	5	6	7	8
Total	172,583	23,303	13.5	1,118	0.6	22,184	12.9	
Age								
17 to 34 years	71,891	11,704	16.3	948	1.3	10,756	15.0	
35 to 54 years	52,303	8,864	16.9	152	0.3	8,712	16.7	
55 years and over	48,388	2,735	5.7	18	0.0	2,717	5.6	
Sex								
Men	81,700	10,446	12.8	485	0.6	9,961	12.2	
Women	90,883	12,857	14.1	643	0.7	12,224	13.5	
Racial/ethnic group								
White, non-Hispanic	139,777	20,429	14.6	939	0.7	19,491	13.9	
Black, non-Hispanic	18,628	1,506	8.1	88	0.5	1,418	7.6	
Hispanic	9,706	796	8.2	63	0.6	733	7.6	
Other	4,472	571	12.8	28	0.6	543	12.1	
Highest Level of education completed								
Under 4 years of h.s.	47,297	1,890	4.0	315	0.7	1,574	3.3	
4 years of high school	66,224	6,991	10.6	193	0.3	6,799	10.3	
1 to 3 years of college	30,287	6,022	19.9	394	1.3	5,628	18.6	
4+ years of college	28,775	8,400	29.2	217	0.8	8,184	28.4	

(continued)

Labor force status							
In labor force	112,441	19,788	17.6	740	0.7	19,047	16.9
Employed	104,464	18,929	18.1	654	0.6	18,275	17.5
Unemployed	7,977	859	10.8	86	1.1	772	9.7
Not in labor force	60,141	3,515	5.8	378	0.6	3,137	5.2
Keeping house	31,016	2,178	7.0	22	0.1	2,156	6.9
Going to school	6,866	524	7.6	330	4.8	195	2.8
Other	22,144	813	3.7	26	0.1	786	3.5
Annual family income							
Under \$5,000	13,016	797	6.1	85	0.7	712	5.5
\$5,000 to \$7,499	11,562	712	6.2	69	0.6	643	5.6
\$7,500 to \$9,999	10,308	742	7.2	44	0.4	698	6.8
\$10,000 to \$12,499	12,079	1,089	9.0	54	0.4	1,035	8.6
\$12,500 to \$14,999	10,509	1,028	9.8	39	0.4	988	9.4
\$15,000 to \$17,499	10,353	1,253	12.1	61	0.6	1,192	11.5
\$17,500 to \$19,999	9,422	1,255	13.3	53	0.6	1,202	12.8
\$20,000 to \$24,999	17,431	2,625	15.1	116	0.7	2,509	14.4
\$25,000 to \$29,999	15,090	2,503	16.6	106	0.7	2,397	15.9
\$30,000 to \$34,999	13,839	2,505	18.1	110	0.8	2,395	17.3
\$35,000 to \$39,999	10,287	1,919	18.7	76	0.7	1,843	17.9
\$40,000 to \$49,999	12,643	2,626	20.8	103	0.8	2,522	19.9
\$50,000 to \$74,999	11,981	2,543	21.2	123	1.0	2,420	20.2
\$75,000 or more	5,112	1,011	19.8	48	0.9	963	18.8
Not reported	8,951	695	7.8	32	0.4	664	7.4

¹ Persons 17 years of age and over on the date of the survey.

² Data are for the year ending May 1984.

³ On the date of the survey. Includes part-time undergraduate and graduate students who indicated that they were also adult education participants.

Note: Data are based upon a sample survey of the civilian non-institutional population. Because of rounding, details may not add to totals.

Source: U.S. Department of Education, Center for Education Statistics, "Current Population Survey, May 1984, Survey of Adult Education," conducted by the Bureau of the Census, unpublished tabulations. (This table was prepared in June 1986.)

As indicated in Table 1, in excess of 23 million Americans described themselves as participating in adult education programs in 1984. (To the best of my knowledge, this is the last year that adult education statistics were collected by the U. S. Department of Education. The triennial survey of adult education was not undertaken in 1987.) This number of learners is slightly less than 14 percent of the total population and constitutes a significant increase from the time of the original survey of adult learning in 1969 when 10 percent of Americans indicated they were participating in some form of adult education. Of greater interest, however, is an analysis of subgroups of adult learners utilizing such variables as gender and race.

While women outnumber men in the general population, they remain overrepresented in the adult learning population: 14.1 percent of women (12,857,000) are engaged in adult education programs as compared to 12.8 percent of men (10,446,000). This is an interesting trend generally, but most important is the underlying cause: the increasing participation of women in adult learning for career purposes. "In courses taken for general, personal or social purposes, women outnumbered men two-to-one throughout the 15-year period 1969-1984. In job-related courses, men outnumbered women two-to-one in 1969, but by 1984 men were slightly outnumbered by women. This indicates women did not abandon the adult education courses taken for personal enrichment, but increased their participation in courses taken for job-related reasons. Men did not similarly balance their adult

education participation during this period." (Hill, p.7) As "women will continue to increase their share of the labor force" during the next 20 years (Occupational Outlook Quarterly, p.3), we can expect that the proportion of women engaged in adult learning, with a career orientation, will similarly increase. "The BLS projects an annual increase in women's labor force participation of 0.8 percent—half the 1972 to 1986 rate, but double the rate projected for the labor force as a whole for the rest of the century. By 2000, 81 percent of women in the prime working ages should be in the labor force, up from 71 percent in 1986. Women will continue to account for nearly two-thirds of all new workers and represent fully 47 percent of all workers by 2000, up from 45 percent in 1986 and 39 percent in 1972." (Richie, p. 36)

The effect of women on the "baby boom" generation has been, if we date the emergence of women's liberation with the maturing of this age cohort, extremely significant. This generation of women has grown up with the idea that they can control their future, and many have used education (as indicated above) to improve their personal lives and their careers. This trend will undoubtedly continue as this cohort of women move beyond midlife: career advancement will necessitate adding to technical and managerial skills and increasing income will foster educational outreach to broaden cultural and personal enrichment. Colleges meeting this demand by older women will encounter a growth market in the 21st century.

Some elaboration of this point may prove useful. In a study I conducted some years ago (Arbeiter, S. et al., "Forty Million Americans in Career Transition"), I discovered that women changing careers—or entering a career from parenting—were far more likely than men to use education and course-taking as the primary transition mechanisms. Their "old boy networks" were nonexistent; they could not easily evaluate their abilities or potential; and they were uncertain about their place in the workplace. Registering for a course or two, particularly at a local or area college, allowed for an easy transition to real world situations, helped establish a network through faculty, fellow students or the placement office, and boosted confidence in one's intellectual abilities. College and learning have served women well, and this affinity should carry through to the 21st century, making older working women a prime target for collegiate recruiting efforts.

Table 1 also reveals interesting differences with regard to race: white, non-Hispanics enroll in a disproportionate share of adult learning programs. 14.6 percent of white non-Hispanics (20,429,000) participate in adult education, compared to 8.1 percent of black, non-Hispanics (1,506,000) and 8.2 percent of Hispanics (796,000). We already know that the black and Hispanic adult population over the next two decades will grow at a rate far faster than that of whites and that these two minority groups will, in actuality, be majority populations in many regions of the country and in most urban areas. If, in fact, they continue to participate in adult education at

approximately one-half the rate of white, non-Hispanics, then we may very well witness a substantial decline in the adult learning population over the next 20 years. This trend holds true, as well, for the work force. A "significant shift in the labor force is the increase in minority workers. Hispanics will account for 29 percent of all new workers as the number of Hispanic workers grows by 4.1 percent a year for the rest of the century. Overall, the number of Hispanic workers will be up by 74 percent representing 10 percent of all workers by 2000." (Riche, p. 36) If these workers are not brought into the adult learning population, both our schools/colleges and labor force will suffer.

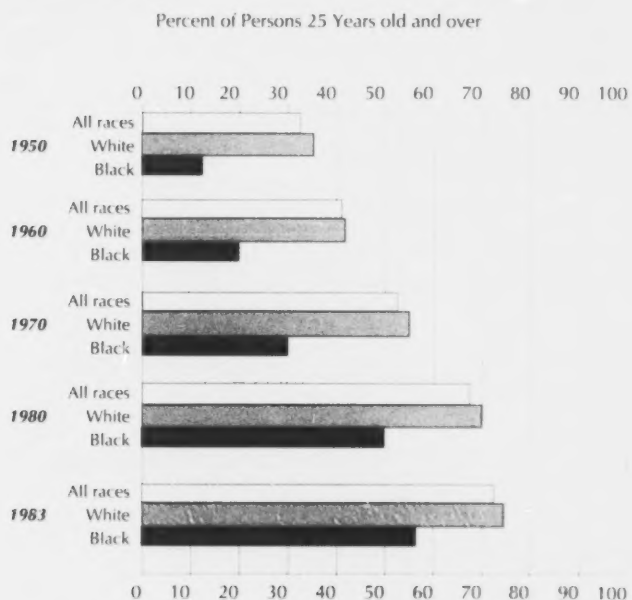
However, the older adults of the 21st century will not display this great a racial disparity. The generation that will be age 45-65 in 2010 numbers approximately 80 million, of which approximately 68 million are white and approximately 10 million are black. This minority proportion of 12.5 percent is far smaller than that of the "baby bust" generation that follows (due to a much sharper decline in white births during the "bust" generation) and it may be anticipated that the participation in learning in 2010 of older adults will be far greater than the one that follows. Colleges that focus on marketing to, and educating, older adults in the 21st century will reach a population that is familiar with the educational experience and disproportionately favors learning.

What may be, perhaps, the most important factor in stimulating continuing education among adults is the level of education already obtained, i.e., the more education an individual has, the broader his interests and abilities, the more likely he or she is to pursue adult learning. This is revealed rather starkly in Table 1: only 4 percent of individuals lacking a high school degree (1,890,000) are participating in adult education while nearly one-third (29.2 percent) of individuals with four or more years of college (8,400,000) are engaged in adult learning programs. The disparity of participation in adult education by income is the strongest variable for adult learning, with each level of education completed revealing increased participation in adult education—10.6 percent of adults who have completed high school (6,991,000) participate in adult education and 19.9 percent with one to three years of college (6,022,000) are similarly engaged. This variable, when combined with the racial/ethnic factor noted above, may bring a substantial decrease in total adult education in the 21st century—but an increase in the learning potential for older adults.

In America we have come to expect that each generation will exceed the previous one in educational attainment—or, at least, in years of formal study. And, as indicated in Figure 1, since World War II, this has proven to be the case: each generation has produced higher proportions of high school graduates, college attendees, and college graduates.

Figure 1.

Percent of Adults Who Have Completed Four Years of High School or More: 1950 to 1983



Source: Chart prepared by U.S. Bureau of Census

However, this trend of increasing educational attainment will undoubtedly be reversed in the 21st century: the growth of the poverty population in America in the current decade, with its concomitant social disarray, will lead in the 1990's to "a continuing decline in the level of retention to high school graduation in virtually all states, . . . a continued drop in the number of high school graduates, . . . and a continued drop in the number of minority high school graduates who apply to college." (Hodgkinson, p. 10) The trends underlying these predictions are ominous, and bode ill for adult learning in the 21st century.

From 1969 to 1979, childhood poverty increased, but slightly and erratically.

From 1979 to 1983, however, the number of children in poverty grew by 3.7 million, and the rate grew from 16 to 22 percent, the highest level in 21 years. The Census tells us that 59 percent of the children born in 1983 will live with only one parent before reaching age 18—this now becomes the NORMAL childhood experience. Of every 100 children born today:

- 12 will be born out of wedlock
- 40 will be born to parents who divorce before the child is 18
- 5 will be born to parents who separate
- 2 will be born to parents of whom one will die before the child reaches 18
- 41 will reach age 18 "normally" (Hodgkinson, pp. 8,3).

The effects of this social environment are already noticeable in the comprehension and reading level of young adults. As indicated in a recent study, "what emerges from our review of the assessment data, whether viewed by text type or by processing demands, is that young adults have limited competence in doing complex tasks. Confronted with simple information searches, direct entry of familiar information on a form, or recognition of an oft-repeated theme, they function at a high level. Basic skills in uncomplicated applications show high mastery. But in more complex contexts where judgments of relevance and similarity must be made and several dependent steps or matches done, abilities decline dramatically." (Venezky, p. 28)

If increased education and comprehension correlate most highly with increased adult learning, particularly at the college level, the next two decades may witness a reversal in the numbers engaged in adult higher education. The younger adult learners, aged 25-45 by 2010, will have received less formal education in the two decades after 1990, and will tend not to seek personal or career enhancement through education—particularly at the college level. However, older adults—those whose formal education occurred during the period 1970-1990—will have more learning and will remain optimistic about the value and benefits of continued education.

Educational attainment and race are both highly related to income, and the final variable detailed in Table 1 views participation in adult education by annual family income. As will be observed, the increase in the proportion of individuals engaged in adult education increases almost directly with family income, except for the last category of over \$75,000 where there is a small decline. As is generally understood, there is a direct relationship between income and education; the more one has of either, the more likely one will obtain the other. Higher income families purchase more education, and increased education leads to higher incomes. The level of income strengthens the argument that older, "baby boom" adults will be strong consumers of adult education: they will be relatively wealthier than the succeeding generation in 2010, having earned more in constant dollars and paid less in their

younger years for such items as homes, cars, and consumer items. In sum, the older learner in the 21st century will be advantaged compared to their children—and a preferred target for adult learning in college.

External Factors

One of Shakespeare's protagonists advised a colleague to look to himself and not to the stars to determine the future. While that is true, we remain vulnerable to a variety of external forces as we proceed with our lives, our work, and our learning. The primary variables that affect adult learning that will be discussed below include

- labor market needs
- business/industry policy
- labor union programs
- electronic communications technology
- international economic competition.

It is difficult to separate these interconnected trends, but I will discuss them as discrete areas and then relate them in the concluding section through public policy analysis and recommendations.

Labor market needs are perhaps the most important factor in determining the extent of adult learning and which adults learn. The skills required by our labor force determine directly educational policy, particularly post-secondary education policy, even though a leavening of liberal arts and general education permeates most post-secondary educational programs. Morgan Lewis has put the question most succinctly. "Many of the babies born in 1984 will enter the labor force in some type of regular, paid employment when they are 16 years old in the year 2000. By 2005, most of 1984's infants will be members of the labor force. What kind of skills will they need? And, how should our society's education and training institutions prepare these new babies, as well as millions of older children and adult workers, with the skills this nation will need? This is the dominant educational question of our time. It is the focus of a debate between those who believe the rapid technological and economic changes this nation is experiencing will require higher skill levels throughout the workforce and those who believe the net effect of technology is to lower, not raise, the skills workers need." (Lewis, p. 3)

Table 2. The Biggest Gainers

(Occupations with the largest job growth, 1986-2000,
moderate alternative; numbers in thousands)

	Employment		Change in Employment 1986-2000	
	1986	2000	Number	Percent Change
Salespersons, retail	3,579	4,780	1,201	33.5%
Waiters and waitresses	1,702	2,454	752	44.2
Registered nurses	1,406	2,018	612	22.6
Janitors and cleaners, including maids and housekeeping cleaners	2,676	3,280	604	22.6
General managers and top executives	2,383	2,965	582	24.4
Cashiers	2,165	2,740	575	26.5
Truck drivers, light and heavy	2,211	2,736	525	23.8
General office clerks	2,361	2,824	462	19.6
Food counter, fountain and related workers	1,500	1,949	449	29.9
Nursing aides, orderlies and attendants	1,224	1,658	433	35.4
Secretaries	3,234	3,658	424	13.1
Guards	794	1,177	383	48.3
Accountants and auditors	945	1,322	376	39.8
Computer programmers	479	813	335	69.9
Food preparation workers	949	1,273	324	34.2
Teachers, kindergarten and elementary	1,527	1,826	299	19.6
Receptionists and information clerks	682	964	282	41.4
Computer systems analysts, electronic data processing	331	582	251	75.6
Cooks, restaurant	520	759	240	46.2
Licensed practical nurses	631	869	238	37.7

Source: Bureau of Labor Statistics, 1987

Table 2 indicates "The Biggest Gainers" in jobs as we enter the 21st century. The trend is summarized succinctly in the various "Projections 2000" labor force reports:

- Driven by a rising demand for services, the service-producing sector will provide 20 million new jobs.
- Every industry division in the service-producing sector will continue to grow.
- Four divisions in the service-producing sector will grow faster than average. Services in retail trade will provide 75 percent of job growth. Health and business services will account for more than one-half the growth. In the retail trade division, eating and drinking places will account for about one-half the growth. (Occupational Outlook Quarterly, p. 3)

In this collection, the paper by Pamela Christoffel posits a labor force requiring that adults be ever more educated. This is one of the major debates in the literature and, put most forthrightly, the question is whether the "forthcoming technological changes raise or lower the level of skills workers need to use the new technologies? Two major positions on this question dominate debate and command public attention." An alternative scenario to the one described in the opening chapter is that the newer technologies will continue to lower skill requirements for most workers and, "many researchers who have examined labor market trends have concluded that the overall effect of most technological advances is to lower skill levels. The most prominent of those who argue this position are Henry Levin and Russell Rumberger, (who hold) that most of the new jobs will be in low-skill service, sales and clerical occupations, and even in these occupations, Levin and Rumberger see technology lowering skill levels." (Lewis, p. 4)

The data and reports I have seen would support the low skill level argument and, therefore, I envisage far less support for adult education and training mandated by career and job needs—and a far smaller role for colleges and college-level courses as a part of certification and recertification for professional and technical jobs and for managerial and supervisory training. Certainly, many of the new jobs created by the economy will require post-secondary education, but these will be filled by recent college graduates. We are all aware of the new "service society" that will emerge full-blown in the 21st century, but are not aware that many of these services will be supplied by low-skilled employees. "Service workers (waiters, cashiers, and so on) are increasing as a proportion of all workers. Many of the jobs that will have the most openings in the decade ahead are service jobs that require little education and offer little hope for advancement." (Riche, p. 38)

There is no secure scenario for the labor market of the future. However, we are often beguiled by catch phrases and imagine a future of ever greater complexity. For example, a recent article in *Insight* magazine (May 23, 1988) speaks of "American business finally coming face-to-face with the reality of a spreading shortage of competent workers. . . . We don't have the workforce we need to do the jobs in the year 2000, and it doesn't really seem as if we have the workforce we need to do the jobs that we have right now" (p. 38). Upon reading further, however, what becomes evident is that American business really seeks basically literate humans to interface with the very intelligent machines that are being put in place. "It is relatively easy to retool the factories," says Pat Choate, Director of Policy Analysis for TRW, Inc. "That's essentially a matter of getting decent engineers and spending the money. The choke point is the workforce. . . . They don't have the basic skills necessary to begin to perform the jobs we're hiring them for. . . . An oft-cited example is a 1987 recruitment drive by New York Telephone Company in which only 3,619 of 22,880 applicants passed the entry-level examination on vocabulary, arithmetic and problem-solving skills for jobs ranging from telephone operator to service representative"

(p. 23). Functional literacy is certainly desirable in every citizen in our country, and secondary schools should be expected to produce graduates who can read, write, and cipher. If, however, we are examining the relationship between colleges and adult education in the next decade, it is to be sincerely questioned if literacy training for the service industry workforce can be envisaged as a proper or useful role for higher education institutions and their faculty. While managers will continue to require college-level training, the "less room at the top" scenario projected for most business and industry in the coming decades will narrow the organizational pyramid and similarly narrow the employee market for college-level training.

A short observation on the difference between the "baby boom" and "baby bust" generations as employees in 2010 is in order. The "baby busters" will be young adults in 2010 and will have, as part of a small age cohort, found entry into the workplace relatively easy—particularly if able and educated. The problem, as noted above, is that these workers will be less educated and "skilled" when compared to the older workers (age 45-65) that precede them. If colleges pursue a public service role related to the workforce, they would be best advised to look after the employment concerns of younger adults in the 21st century, leaving older workers to the "market-place" to purchase adult learning.

The new communications technologies will play an additional role in limiting the role of colleges as a force in educating adults. The "learning place" will be broadened significantly in the 21st century and individuals will be able to acquire personal and career skills from a variety of sources—including video and audio tape courses, programmable video disks that enable learners to proceed at their own pace and place, and television through a multitude of cable and narrow cast networks. John Kenneth Galbraith on economics, Peter Drucker on organization and management techniques, Paul Samuelson on money management, etc. are available directly to learners on tape or disk and there is minimal need for a "middle man" to provide for course delivery. Naturally, colleges will maintain control over credit and degrees, and if adult learners wish to translate their acquired knowledge into a certificate or diploma, institutions of higher education will maintain a useful role in evaluating learning or supplying additional courses towards a degree. However, as adult learners seeking specific career skills appear to be increasingly satisfied with short courses, the function of colleges in broadly educating the "whole person" will decrease as a part of adult learning in the 21st century.

Two additional external factors are, in reality, closely linked: the education policy of business/industry and international economic competition. At the present time, business/industry spends approximately \$50 billion annually in employee training, and a significant portion of these monies is used to enhance the managerial, financial, computer and supervisory skills of managerial employees. The bulk of this training activity is awarded to colleges as businesses pay the tuition costs of employ-

ees to pursue a wide spectrum of MBA degrees, management seminars, summer supervisory institutes, financial workshops, interpersonal skills seminars, etc. However, support of these activities by business/industry may be fast becoming a luxury it cannot readily afford.

Japanese, Korean, and even European businessmen appear to devote significant "time-to-task" with minimal or no management or supervisory training. (In fact, the undergraduate college education of most Japanese appears perfunctory when compared to the rigors of their elementary and secondary schooling.) The literature describing Japan, for example, indicates training programs dedicated to middle management who are "not producing" or are "burnt out." This consists of motivational exercises that may appear, by Western eyes, to border on humiliation. What is not evident in the literature are strong Japanese graduate schools of business or management and/or a continual retraining of supervisory or managerial personnel in such areas as employee motivation or management techniques. Rather, the cultures of these nations appear to transfer team work, task orientation and role playing from the community to the workplace—and training is not needed to bring efficiency to the factory floor of the sales arena. In meeting this international competition, it is questionable whether American industry can permit managers the time away from office and factory to pursue graduate education or managerial training—or whether this cost can be absorbed into ever lower profit margins. "Seeking to reduce cost, (companies) view labor as an expense, but trying to improve decisions, they view labor as an asset. Here lie the central developmental tensions of a service economy. . . . How can companies reduce fixed costs to remain flexible, while investing in long-term workers who understand the business?" (Hirschhorn, p. 3)

Labor unions, too, will have to face the question of bargaining for jobs, employee training, improved wages, or better working conditions. Currently, many labor unions, particularly those with a social orientation such as the United Auto Workers, the American Federation of State, County and Municipal Employees, and the United Federation of Teachers have negotiated employee education benefits into their contracts. In recent years, and possibly more so as America approaches the end of the 20th century, labor unions have been more concerned with protecting jobs and securing the working conditions of their members. The UAW, for example, places highest on its negotiating roster job security—with important matters such as salary, fringe benefits (including tuition reimbursement), and even working conditions assuming a lower order of importance. We should, therefore, consider strongly whether labor unions will, in the 21st century, be concerned with the education and training of their members or whether, in light of the competition of "off-shore labor" they will be more concerned with job security and job quality. Providers of adult education should ponder carefully the effects of an America in a global production arena and labor market as they plan courses for adults in the 21st century.

The listing of external factors that will impact on adult education, particularly for courses and programs offered by colleges, is not intended to be discouraging with regard to this enterprise, but rather to set the agenda for a realistic discussion of alternatives. We can "look to ourselves" to control our destiny despite the message delivered by our stars. It is, therefore, appropriate to conclude this paper with a discussion of public policy options to provide a choice for America in the 21st century as it evaluates the benefits and costs of educating its adults—both the baby boom generation that will be aged 45 to 65 in 2010 and the baby bust generation that will be in their 20's and 30's as America starts the new century.

Public Policy Discussion and Recommendations

With these two sets of trends in mind, let us turn to specific populations of potential adult learners in the 21st century and discuss governmental and institutional responses to their continued education. As is most proper in public policy discussions, we should start with groups from the bottom of the education and economic ladder and work our way up to determine the most effective use of public monies in furthering adult learning—particularly the education of older adults.

First on the list should be the education of the new wave of immigrants entering America during the 1980's and the 1990's. Many of these immigrants are children and teenagers who will be treated (or mistreated) in our regular school systems. However, the majority of immigrants are adults and in the 21st century they will constitute a significant portion of older Americans in need of continued education and training.

Most Americans do not realize that the current decade will witness the greatest influx of immigrants in American history. "Immigration to the United States during the 1980's is expected to match or exceed the historic high mark set by the flood of nearly 9 million immigrants who reached American shores in the first decade of the century. . . . The number of legal immigrants between 1981 and 1990 will equal or surpass the 8.7 million total between 1901 and 1910. If illegal immigrants are included, the current total would be several million higher." (The Record, p.1) And the following decade will be equally active. David Simcox, Executive Director of the Center for Immigration Studies, has stated that "the 90's in the U.S. will continue to be a very inviting place for immigrants. America continues to be an attractive place to live, and people come here because they feel they can get a better life. That was true at the turn of the century, and it probably will be true at the turn of the next century." (The Record, p. 16)

These immigrants are viewed by many business and industry groups as a positive factor as they will accept lower level jobs that native Americans are unwilling to

undertake. However, many new arrivals are not literate in English and will continue to find themselves "locked in" to dead-end jobs and besieged by new legislative initiatives to "speak and read English" in order to vote or be the recipient of government services in various of our states. These restrictions can lead to frustration and social instability. Do colleges, with their language laboratories and various software and video programs for language instruction, have a role to play in the literacy training and basic education of these older immigrants? Is this a new type of "Land Grant" role for colleges? And finally, should federal or state monies be made available to equip these adults for other than lower level tasks in our labor force when these are the jobs that go begging for employees?

One level higher than recent immigrants are native Americans who dropped out of the public education system as teenagers and lack functional literacy and job skills. As indicated above, Harold Hodgkinson believes that many of the elementary and secondary school students of the 1990's will, because of the various pathologies of urban society, emerge in the 21st century as ill- or undereducated adults. Should there be policy initiatives at the federal and state level to encourage "Second-Chance Colleges" for these adults to facilitate their entry into the mainstream of American life? Is there sufficient impetus within the institutions of our society (industry, unions, our churches, etc.) to develop educational initiatives for these Americans? "Evening college" has a warm ring for most Americans but it will prove costly to subsidize these low-wage Americans, and colleges might have to lead a crusade on their behalf with the American public and national and state legislators to provide for their continued education.

There are three basic ways that national and state governments can support, in whole or in part, the educational pursuits of these adult students in the 21st century. And, to be perfectly honest, current government policy bodes ill for future support of adult learners.

The most direct method of support is student financial aid to cover the tuition costs of college attendance (most adults will not have dormitory and food costs as a part of their college attendance). At the current time, all students (traditional age and adult) are eligible for student aid from the federal government and most state governments based on need—if they take six or more credits during a semester or quarter. Public funds accounted for 15 percent of adult education payments in 1984, although this would also include grants from programs such as CETA. Two modifications of this policy would greatly assist adult learners and expand this proportion of public monies: 1) Modifying the requirement for aid to make eligible those students who take three credits or more. (Many adults find a single course sufficiently taxing.) 2) Utilize a distinct needs analysis procedure for adults as their earnings, while exceeding that permitted for traditional age students to receive aid, are oft-times totally allocated to support home and family.

A second approach would be modification of tax law or regulation at the federal level to permit the tax deduction of all educational expenses for college. Currently, only job-related courses are tax deductible (although non-work-related study has been deductible in past years) and the policy should be made applicable to all learning activities, particularly those pursued at the college level. This would have the dual effect of demonstrating a public commitment to adult learning and softening the impact of college costs for lower-income Americans.

Finally, employers should be encouraged through direct incentives (as in the Job Training Partnership Act) or through tax deductions to support employee continuing education—particularly for lower-income employees and those facing job elimination. The financing of adult education by employers has grown significantly (from 23 percent of all payments in 1969 to 36 percent in 1984) and should be encouraged. As indicated in an article in *The Chronicle of Higher Education* (July 20, 1988), this tax exemption is "important to colleges (as it) helps them attract students." (p. A17) If only from self-interest, colleges should consider the importance of guiding public policy towards the continued education of undereducated adult students—both as a social good and to expand a market for their educational services.

At a next level of public interest is the furtherance of educational opportunities and training for those adults seeking career change, job upgrading, career transition or job mobility. Of utmost concern in this category are those employees facing job obsolescence when an industry or factory is eliminated because of foreign competition or is relocated to obtain lower labor costs in a different part of our nation or "off-shore." There are monies available currently to retrain such workers, particularly under JTPA, although these funds appear directed to specific job training and do not involve colleges. As we look to the 21st century, this type of government funding will have to become more flexible and involve higher education to a greater degree.

These public programs will impact differentially on adult learners, particularly older adults. The "baby boom" adult learners in 2010 will be older adults aged 45-65. This cohort will contain a small proportion of undereducated and marginally employable individuals that would be aided if public policy is directed towards "Second Chance Colleges" for those Americans who missed out on a secondary or higher education in their youth. However, the bulk of older Americans in the first decade of the 21st century will be employed, many at mid-level positions due to the competition for the small number of high-level jobs on the part of this large "baby boom" generation. A sensible public policy for the 21st century, if we wish to maintain older Americans as productive and satisfied employees in a labor force to and through the traditional retirement age of 65, would be to open a variety of educational experiences to them in order to sharpen their career skills and maintain their job and work interest.

Let us consider the workforce implications for adult learning a bit further. As noted in the first section, the labor force in the 21st century will have higher proportions of workers from minority groups, particularly blacks and Hispanics. These racial/ethnic groups normally have a very low representation in adult learning and this relates both to the lower income and lower level of educational attainment within these groups. Therefore, minorities will constitute a "market" for adult education institutions only if the job market needs are sufficiently tight to compel employers and/or government to support their continued education and training. Again, referencing the second section of this paper, it is doubtful that the service economy of the 21st century will require many employees trained beyond the level of basic literacy and comprehension—and these will be supplied by traditional-age graduates from high school and college. If public policy is to be directed successfully to the needs of marginal workers, it will have to be under the guise of expanding their role as citizens or parents, and not supported by claims of increasing the productivity of our labor force.

Using an improved labor force as rationale for the education of older adults may similarly prove self-defeating. Current projections would indicate that "people 55 and over will have a smaller share" of jobs in the 21st century than they do currently. "Workers aged 55 years and older will have declined from 17 percent of the workforce in 1972 to 11 percent of the workforce by the year 2000." (Projections 2000, p. 8) This may be due to early retirement from a variety of mid-level jobs in the absence of mobility to top-level positions. "The economy is moving from a work force that has a majority of people in the middle who were well paid and moving ahead, to a work force in which we have a small number of high-paid executive and professional people at one end and a large group of low-level service, clerical, part-time and female workers at the other—and nothing much in the middle. It hasn't happened yet. We are about a tenth of the way, but in 10 years it's going to happen unless we do something about it." (Hodgkinson 2, p. 10) It is a possible rationale, as noted above, to hold educational leaves or mini-courses as an inducement for older workers to remain, but the courses would be more avocational rather than related to improving job efficiency and national productivity. I would not be optimistic that government policy would support such educational enterprises unless and until it can be proven that these older workers are required for improved productivity or our national security.

Of additional concern to colleges seeking adult students in the 21st century is the competition from business. This will take two forms: delivering educational services to non-employees and training one's own employees. As noted above, electronic communications will become an ever more powerful delivery system for courses and training—and business suppliers are able to respond more rapidly and at lower cost

than most colleges. Business does not require faculty approval to develop and offer a videotape or audiotape on global economies or the art of El Greco—and is able to offer these "learning modules" on a national basis, thereby gaining economies of scale and lower cost. The same holds true for job training programs offered through computer-aided instructional software. If adult education offers a potential for profit, business will seek a niche in this area.

A second encroachment by business in the college domain is offering courses directly to its own employees. "A new development on the scene of business and education is the growing number of corporate colleges, institutes, or universities that grant their own academic degrees. It is the Rand Ph.D., the Wang or Arthur D. Little Master of Science degree. No longer the purview of established educational institutions alone, accredited academic degrees are being awarded increasingly by companies and industries that have created their own separate institutions and successfully passed the same educational hurdles used to accredit traditional higher education. If this is startling news to the higher education establishment, just consider a recent prediction by U.S. News and World Report. In the next 50 years, the magazine suggests: 'Industry, for one, will become much more involved in education and job training. Hundreds of corporations will grant degrees, most often in high technology, science, and engineering, where state-of-the-art equipment and research will surpass that on most campuses.' " (Eurich, p. 85) And, if business can bypass colleges and offer courses directly to employees, this would prove most acceptable public policy.

The basic educational opportunities of courses, workshops, seminars, and alternative learning options will be readily available in the 21st century in a variety of in-person and electronic modes. The key variable with regard to public policy will remain the labor force and productivity needs of the American economy and, unless there is a coordinated and focused effort undertaken by schools, colleges, labor unions and employers to influence governmental policy, I am pessimistic that public monies will be made available for adults, particularly older adults, to pursue learning in the 21st century. When asked "What kind of skills are going to be needed, given the kinds of new jobs that will exist?", Harold Hodgkinson gave the following response: "I feel that most will not need high level skills in order to get a job because as a janitor or a truck driver, they simply won't be necessary. However, skills such as the ability to make decisions, to think logically or to communicate clearly are certainly valuable for citizenship. As a matter of fact, if you look at the catalog of the average liberal arts college, what you will see is content quite like that in terms of the things the college tries to do for its people. If we are truly moving into a society that will have more leisure (and we are), then people will have to learn how to use that leisure in a more intelligent way than they have up until this present time. Maybe that's not a bad objective for a school or college given that new dynamic." (Hodgkinson 2, p. 14)

Learning for adults will either be a personal consumption item or will be deferred as adults set aside monies to pay for the ever-increasing cost of secondary and college education for children and grandchildren. It is simply not realistic to expect that public monies will be used to support learning for leisure. If colleges cannot base their adult learning on support of the economy and labor force, it had best seek students who are self-supporting.

This paper opened with a modest disclaimer about predicting a future two decades away—and it is a good way to close. The requirements of the labor force and the national economy being so closely linked to adult learning, it is sobering to realize that "in order to project the size and composition of the nation's GNP, economists build a model of the economy that correlates numerous economic factors. The 1986-2000 projections were based on a model made up of approximately 2,400 equations, driven by a set of 900 exogenous variables. . . . Variables involve policy decisions that, while subject to change, have remained fairly constant for many years." (Kutcher, p. 8) With regard to economic growth, the labor force and the learning force, we need not be at the mercy of our "stars"; we can help ourselves. With coordinated support from labor, business, schools and colleges, public policy in the 21st century can be shaped to support adult learning.

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Financing Higher Education Over a Lifetime

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The financing of higher education in America has historically been facilitated through an implicit agreement among the generations. The **generation in school** has helped to pay for its own education by working while enrolled, by borrowing, and through savings. The **generation at work** has contributed as parents to their children's education, and as taxpayers in the form of state and local funding of public institutions and through federal support of higher education institutions and students. Over the past several decades, individuals in the labor force increasingly have become part of the generation in school in an effort to further their careers or to enrich their lives. The **generation in retirement** also plays an important role in the financing of higher education, not only as taxpayers but in providing financial help to its grandchildren. Like those still active in the labor force, the generation in retirement in recent decades has also greatly increased its participation as part of the generation in school.

The nature of American higher education has changed dramatically over the past several decades. College enrollments doubled in the 1960's and grew by another 50 percent in the 1970's before they began to level in the middle of the decade. (Since the mid-1970's, college enrollments have increased modestly at a rate of about one percent per year.) During the period of rapid expansion, community colleges were the fastest growing sector of higher education. Enrollments at these institutions grew from less than one million in the 1950's to nearly five million in the 1980's; the share of total enrollments in community colleges went from less than 10 percent in 1950 to over 30 percent in 1980. More recently, the fastest growth in enrollments has not been in the collegiate sector but rather in vocationally-oriented programs, especially at proprietary (profit-making) schools, which are not considered part of higher education but fall, instead, under the broader category of postsecondary education.

As a result of these trends, most of the growth in higher education enrollments has not been the traditional college student aged 18 to 22 attending an academic program on a full-time basis and living on campus. Today, two-fifths of all college students are at least 25 years of age, and older students may constitute a majority of college enrollments by the turn of the century. Over 40 percent of today's college students attend on a part-time basis. With these changes, the viability of the historical compact among the generations for financing higher education has come under question. To what extent do the traditional means of financing higher education

apply when the "typical" college student is in a distinct minority on many of today's college campuses?

The ability of the intergenerational financing compact is also threatened by a series of external economic and demographic trends which are likely to have substantial impacts on the pattern of future financing of higher education. One such trend is the continued growth in the number of elderly individuals over the next several decades and the increased governmental resources that will be needed for the income support and health care of this population. This demand for resources could well detract from the availability of funds for higher education as well as other domestic needs. Another trend is the decline in the number of two-parent families and the impact this decline may have on the principle that parents should bear a primary responsibility in paying for their children's college education.

This paper examines and discusses the financing issues that are raised by these emerging economic and demographic trends for three groups of individuals:

- First is the traditional college age group of 18 to 24 year olds. How do we ensure that these students and their parents will continue to be able to pay for the costs associated with college attendance?
- Second are members of the labor force who would like to further their education in order to move up in their present job, to seek other employment opportunities, to change careers, or simply to learn something new. What can be done to provide enhanced opportunities to meet the education, training, and retraining needs of millions of Americans in the work force, with special emphasis on the situation of dislocated workers and farmers and displaced homemakers?
- Finally there are the retirees who wish to attend higher education to complete the degree they never received, or for enrichment purposes. How can we ensure that adequate financing is available for older retired individuals who wish to benefit from what postsecondary education and training has to offer? Perhaps more importantly, what can be done to increase the interaction between the in-retirement and in-school generations through the medium of higher education?

Financing Postsecondary Education for Traditional College Age Students

The tradition of paying for college through a combination of family resources and financial aid has come under increasing pressure in the past decade. These pressures include the highly publicized rapid increase in college tuitions and other charges, and a slowdown in the growth of family incomes and federal student financial aid funding. The widespread perception that federal funding for student aid has sharply

declined is based on a series of Reagan budget requests, although congressional rejection of the Reagan requests actually led to a slight funding increase in real terms during the 1980's for the two major student aid programs—Pell Grants and Guaranteed Student Loans (GSL). These increases have been offset, however, by a decline in veterans' education benefits and a phase-out of Social Security payments for the college costs of the children of deceased or disabled recipients. These trends have been accompanied by shifting enrollment patterns, including a worrisome leveling or decline in the college participation rates of Black and Hispanic students, and the increase in the participation of older students, who continue to grow as a proportion of all college enrollments.

The growth in college charges, a perceived decline in financial aid, and changing participation patterns have, in turn, led to questions about whether the current system for financing American higher education will be adequate for the future. Parents are barraged by stories in the media about the growing cost of a college education, especially at the highest priced institutions where tuition, room and board, and other expenses now equal \$20,000 a year. What many parents and students do not hear is that the average annual tuition at public institutions, which four-fifths of all college students attend, was \$1,200 in 1988-89 and the total cost of attendance is roughly \$5,000 per year. Although the perception of the cost of college far exceeds the reality, it is the perception of rising costs that may be having the larger impact on the behavior of parents and students.

One concern arising from these trends is that the historical reliance on parents to pay for their children's undergraduate education appears to be eroding. A measure of this erosion is the increased share of student aid dollars that now go to students who are deemed financially independent of their parents. For example, in the largest federal student grant program—Pell Grants—more than half of the recipients now claim independent status, up from about one-third a decade ago. The growing number of older students is the principal reason for the increase in the proportion of aid recipients who are financially independent. But these and other data also suggest that more middle-class parents may be throwing up their hands at the reports of burgeoning college costs, and deciding to let their children make it on their own through increased eligibility for student aid, work, and their own savings.

What can be done to reestablish the linkage among the generations in the financing of higher education to permit more adequate options for the traditional college age group in the face of rapidly rising tuitions and other charges? One possibility is to reform the current student loan programs to place a greater share of the responsibility on those students who borrow. A second step would be to encourage more savings by parents and grandparents as a means of limiting the burden that is placed directly on students.

Pursuing student loan reforms. During the 1988 presidential campaign, Michael Dukakis proposed a major reform of the student loan programs through what he called Student Tuition and Repayment System (STARS). Under STARS, students would have been able to borrow federally guaranteed loans from banks and repay through additional withholdings in their payroll taxes. The amount withheld would be geared to a percentage of earnings per \$1000 borrowed (estimated at between one-eighth to one-quarter of one percent of covered wages) so that the amount repaid would reflect a function of both how much was borrowed and the borrower's income once schooling was completed.

George Bush also had an oar in on this issue through his endorsement of the Income Contingent Loan (ICL) program, which the Reagan Administration proposed and then convinced the Congress to establish as a small pilot program involving students at ten institutions. Under the ICL approach, the federal government provides loan capital to educational institutions to make loans that are to be repaid as a percentage of income based on the taxable income of borrowers once they graduated. Like the Dukakis plan, the amount that ICL borrowers repay depends on both the function of their income after they graduate and how much they borrowed while in school. Unlike the Dukakis suggestion, the ICL program relies on educational institutions rather than banks to act as loan originators using federal capital. Also, unlike the Dukakis plan, the ICL approach does not require borrowers with higher incomes once they graduate to subsidize, in effect, the repayments of those borrowers with lower incomes.

At the current time, ICL remains a small pilot program and has not generated widespread support in the higher education community. The opposition to (or boredom with) the ICL program stems from: considerable inflexibility in what participating institutions are allowed to try under the plan, the size and length of the repayments called for under the income contingent schedule, especially for low income borrowers, and the fact that the program does nothing to relieve the debt burden of the students who borrow in the much larger GSL and other federal loan programs.

A related and, in many ways, more intriguing approach to student loan reform is one suggested by Robert Reischauer. Under his Higher Education Loan Program (HELP) plan, which served as the initial basis for the Dukakis STARS proposal, funds would be borrowed from the Social Security trust funds and then repaid through payroll deductions that are geared to the income of the borrower and the amount borrowed. The Reischauer plan has an elegance in that repayments would automatically flow back into the source of capital—the Social Security trust funds. The repayment rate could be set at a level that is equivalent to, or better than, the rate of return that the funds currently receive through their investment in government bonds. The Dukakis proposal picked up on Reischauer's suggestion that student loans should

be repaid through payroll withholding, but rejected the idea of using the Social Security trust funds as the source of capital as not being politically feasible. Higher education proponents can reasonably argue, however, that using the Social Security funds as a source of capital for student loans is not only financially responsible, but would also serve to reaffirm the traditional compact between generations for paying for college.

Several safeguards in the application of the Reischauer approach would be needed to ensure that the generational compact in financing higher education is strengthened rather than weakened. For one, the loans should not be allowed to cover the full costs of a college education. Instead, they should be limited to a percentage of costs through the imposition of loan limits, as is currently the case in the federal student loan programs. Without such a limitation, there would be considerable pressure on colleges to raise their prices and to allow loans to pick up the slack. This would exacerbate what is already viewed as a major problem of the growing imbalance of loans to grants. In addition, without sufficient limitations, the amount that some students borrowed could become excessive. Repayments would not be excessive in the sense that students could not afford it, since repayments would be geared to the income of the borrower. But repayments could become a burden on the next generation of students if today's borrowers find their own student loan obligations infringing on their ability as parents to pay for their children's college educational costs. Such pressures would greatly detract from efforts to restore the intergenerational compact in the financing of higher education.

My own preference is to modify the current student loan programs to introduce an income contingent component, but only for those borrowers whose debt service exceeds their ability to repay once they complete their education. Such a program of "low income insurance" would allow borrowers with heavy debt burdens relative to their incomes to petition for longer and graduated repayments as well as income contingent schedules. For the bulk of borrowers who currently can afford to repay and do so, however, they would continue to repay as they do now at amortized (equal payment) terms.

I would also advocate further exploration of the idea of using the Social Security trust funds as a source of loan capital for educational institutions acting as lenders. Colleges and universities with a demonstrated financial capacity to lend and a secure credit rating should be able to borrow from the trust funds at a rate that was at least as high as what the trust funds currently receive on the government bonds they hold. The institutions would, in turn, lend these funds to students, possibly absorbing an interest subsidy by not requiring the students to repay while they were in school. Such a subsidy would, nonetheless, cost an institution much less than providing the same student with an outright grant. Institutions, not students, would be responsible for repayments back into the trust funds, thus greatly easing administrative concerns

by limiting the trust funds' contact to several hundred colleges and universities instead of millions of student borrowers. Existing secondary markets could be utilized to ensure greater leverage in the use of the initial funds to provide additional needed loan capital.

Another means for reducing the loan burden on students is to facilitate the ability of parents to borrow and save for their children's educational costs. To be sure, the availability and use of loans by parents to meet college costs has increased. The federal government guarantees private loans for parents through the PLUS program, a number of states and institutions have established nonfederal loan programs for parents, and home equity loans are becoming a major source of college financing. But one reason why there has been an erosion in the parental role in paying for college is that loans to parents have not kept pace with the growing costs of college attendance. More could be done to utilize parental borrowing capacity as a means for reducing the burden on the current generation in school, thus freeing up their capacity to borrow when they become parents. More should also be done to link borrowing with the savings incentives discussed in the following section so that parents who find their savings insufficient to meet college costs can use whatever savings they have as leverage for better borrowing terms.

Creating incentives for college savings. The price of a college education has always exceeded the ability of most families to pay through their current income. In the past decade, the gap between college costs and incomes has widened, with the rapid increase in tuitions and the stagnation in the real level of family incomes. Thus, savings have been and remain an important way in which parents meet their obligations of paying for the college expenses of their children. Savings have also been the route by which grandparents help their children meet the college expenses of their grandchildren. Although no systematic figures are available on the amount of savings that are devoted to the payment of college costs, a reasonable estimate would seem to be that at least \$10 billion of savings are annually used to pay for college expenses.

Despite the obvious importance of savings in the financing equation for higher education, the system is not designed to maximize the amount that parents save for their children's education. Borrowing for college costs is much more highly subsidized by the federal government than are savings, which helps to explain why loans have grown as a source of funds for college while savings have not. For many years, tax benefits for college savings were limited to gift, trust, and loan arrangements that principally benefited (and were largely used by) wealthier families. The 1986 tax reform legislation eliminated or restricted the use of many of these arrangements, including the Uniform Gifts to Minors Act which was the one provision that middle and lower income parents were likely to utilize.

Savings for college are also discouraged in the sense that in the formulas used to determine the financial need of families in applying for student aid, the amount of parental assets reduces the eligibility of the child for need-based aid. Although the disincentive to save in most cases is small because the amount of aid received increases only marginally relative to the decreased size of family assets, a disincentive does nonetheless exist.

Discussions about savings for college are only a small part of a much larger problem involving this country's very low savings rate, which remains at or near its lowest level since the end of the Second World War. A low savings rate serves to limit the rate of investment and consequently the ability of the nation to grow in the future. Concerns about the low national savings rate have periodically been translated into proposals for providing additional incentives to encourage more savings, including many intended to encourage parents to save more for their children's college education.

Tuition guarantee plans such as the one enacted in the state of Michigan are one example of a program designed to encourage savings for college. Under the Michigan and similar plans that have been passed in a half dozen states over the past two years, parents or others can make a payment today that will cover tuition at the time the child is ready to enter college, no matter what the tuition is at the time of matriculation. Hence, parents and others who participate in these plans are "guaranteed" that what they pay today will cover what tuitions will cost in the future.

Advocates of the Michigan plan contend that it will help encourage families to save by assuring them that their savings will cover the future cost of tuition. Skeptics point out that only relatively wealthy families who can afford to save the amount of current tuitions are likely to benefit. In addition, the benefit that is provided to participants in the form of a guarantee against future tuition increases must be financed in some manner. The state can serve this function if it is willing to make up the difference between payments from the fund and the cost of future tuitions. Or the institution can bear the risk by accepting payments from the fund that are less than tuition at that time. In the worse case, tuitions may be increased for those students whose families cannot afford to participate in the guarantee plan; in effect, they would be paying for the guarantee benefit provided to wealthier families who can afford to participate. In any case, there is a risk that tuitions will increase faster than investment returns to the guarantee fund, and that risk must be paid by some organization or individual other than the beneficiary.

It is also possible to encourage savings without providing a guarantee against the size of future tuitions. Many states after examining the Michigan plan have decided to encourage savings through other means. Illinois and a dozen other states have

opted instead to encourage savings through the issuance of tax-exempt bonds. In some of these plans, the state will pay modestly higher returns if the bond is used to meet college costs. During the final days of the 100th Congress, a provision was added to the federal tax code that permits an exemption on the interest earned on U.S. Savings Bonds bought beginning in 1990 if the bond is turned over to a college or university for the payment of tuition.

These federal and state savings provisions, however, are not likely to have a substantial impact on the amount that parents and others save for college. The tax benefit and the incentive provided is typically too small to free up additional savings, although it is perhaps large enough to encourage the shifting of savings from one form to another. In addition, to the extent that these benefits are in the form of tax savings, they are regressively distributed since the savers with the highest incomes will net the greatest benefit because their tax rates (and therefore their tax savings) are highest.

Additional savings incentives of greater magnitude and with greater distributional equity than those already passed could be enacted. This could be accomplished by adding to the return of savings that are used for college rather than providing a tax benefit, or by paying higher returns in addition to whatever tax benefit is already provided, but limiting this additional payment to less wealthy families. For example, in the case of the tax exemption for the interest on U.S. savings bonds, when they are used to pay for tuition expenses, the return on these bonds could be increased instead of the tax exemption, or in addition to it, for low and moderate income families.

Paying for the Education, Training, and Retraining of the Work Force

Over the past two decades, there has been a rapid and substantial increase in the proportion of the work force that is college educated. Today, one in four members of the labor force has completed four or more years of college, twice the ratio that applied two decades ago. The proportion of the work force with between one to three years of college has also doubled to roughly one-fifth. As a consequence, nearly one-half of today's labor force has at least one year of a college education. (Howe, Wayne, "Education and Demographics: How Do They Affect Unemployment Rates?", *Monthly Labor Review*, January, 1988.)

It is also widely recognized that the nature of careers and the training necessary for those careers are rapidly and dramatically changing. The fact that entrants into the work force today are likely to have at least several careers during their lifetimes is a topic that has been much discussed. The fact that education and training must be flexible to accommodate these changing careers is also well recognized. The need to provide more education and training to individuals who are already in the labor force

and older than the traditional college age readily follows from the first two trends.

The past several decades have also seen a remarkable increase in the number of students who are older than the traditional college age. Some of this growth in the number of older students has been the result of greater marketing by colleges to this population to offset the effects of the decline in the number of traditional college age youth. But the growth in older college students has also been the result of the students themselves recognizing the benefits derived from the additional education they receive.

Despite the changing educational needs of the labor force, most observers agree that the current system of financing postsecondary education does not adequately meet the needs of individuals in the work force who wish to continue their education. Three actions would help in this regard. One is a revision in the student financial aid program rules that would allow for the greater participation of older, nontraditional college students. Second, there should be greater certainty in the favorable tax treatment afforded to employer-paid educational benefits provided to employees. Third, greater assistance should be made available to unemployed workers who wish to use postsecondary education to improve their job skills, with special emphasis on the situation of dislocated workers and farmers and displaced homemakers.

Revising the student aid program rules. There are really several obstacles in the current student aid programs that serve to prevent the full participation of older students. One is that the system of financial needs analysis is not geared to the needs and the situations of individuals currently in the work force. Instead, the methodology places older students in the work force at a disadvantage because it takes into account the income of prospective students for the year preceding the year of attendance. Thus, the person who has been working and who would like to return to school is treated the same as a financially independent student of a more traditional college age who has not been working. The treatment accorded to independent students is deliberately harsh because the system is designed to discourage those who are still receiving parental support from declaring financial independence out of convenience. But older individuals who are clearly not dependent on their parents suffer from being thrown into the same category as younger students. A 40-year-old secretary earning \$10,000 to \$15,000 is clearly in a different financial situation than one who is 20 years old and earning the same income, but they both would be treated the same in applying for student financial aid.

Another way in which the current system tends to work against the interests of older nontraditional students is the limited amount of aid that is made available to students who enroll on less than a half-time basis. Typically, these students have not

been eligible for government financial aid programs. In the 1986 reauthorization of the Higher Education Act, however, undergraduates attending on a less than half-time basis were made eligible for Pell Grants, beginning in fiscal year 1990. Availability of Pell Grants for these students should serve to stimulate the number of older students who enroll for one or two courses in collegiate or vocational programs. But if overall Pell Grant funding is not increased at the same time, the growth in the number of students enrolled less than half-time may be achieved at the expense of students who enroll half-time or more.

Strengthening employer education assistance provisions. Unlike the traditional college age group, the main form of financial assistance for older students is not government aid. Instead, the benefits that employers pay for the tuition and other expenses incurred by their employees are the primary external form of assistance available for individuals in the work force who wish to continue their education. Reliable data are not available on how much education assistance employers provide, but a reasonable estimate is that, at a minimum, employers spend one to two billion dollars annually on education benefits. (This figure does not count the assistance provided by universities to their graduate students in the form of fellowships and assistantships which, because of the definitions used in the tax code, may be counted as employer-paid assistance.) One to two billion dollars, however, pales in comparison to the nearly \$25 billion in student aid that is provided each year through governments, institutions, and other sources. It is even smaller when compared to the education and training expenditures that employers provide directly to their employees, which now annually cost upwards of \$50 billion.

The primary federal stimulus for employers to provide education benefits has been the employer education assistance provisions of the tax code. The federal government under these provisions not only permits employers to deduct these expenditures as legitimate business expenses, it also allows employees not to declare these benefits as taxable income, as would be the case with many other employee benefits. These tax provisions, however, have had a rocky existence since their inception in 1978 because of the sunset provision which has always been attached to them. Congress has consistently been slow to renew these provisions when they were scheduled to expire. In several instances, the tax exemption has been enacted retroactively because the existing authority had already expired.

In 1988, this authority was extended once again retroactively, but this time only for undergraduate expenses. The continued temporary status of this provision greatly adds to the uncertainty among employees as to whether the benefits they receive will be counted as taxable income. The recent restriction in the tax treatment to undergraduate expenses is likely to have a dampening effect on the use of education as a vehicle for career enhancement, especially in those fields such as teaching or busi-

ness where a master's degree is viewed as being an essential credential for advancement and promotion. The employer education assistance provisions are too important to be subjected to this annual buffeting; a longer term policy is urgently needed.

Financing the retraining of unemployed workers. For many individuals in the labor force, the financing issue of greatest importance may be the current lack of a policy for helping unemployed and more seriously dislocated workers who find that they need retraining to reenter the active work force. Very little aid is provided to these individuals at the current time, and what is provided is not available in a systematic way that allows for easy transitions back and forth between the work place and the educational environment.

The Department of Education student aid programs, as has already been mentioned, are not constructed with the older student in mind and, therefore, are of little assistance for unemployed or dislocated workers. A few provisions have been added to the federal student aid legislation over time that are intended to help the situation of dislocated workers. For example, when applying for financial aid, someone who is unemployed may substitute their estimated income for the current year for the actual amount they received in the previous year, thereby increasing their eligibility for aid. But the amount of aid that is provided as a result of these provisions is minimal.

A limited number of colleges and universities have in recent years established programs to provide tuition breaks for dislocated workers or farmers who wish to begin or continue their college education. But only a handful of institutions currently provide such a benefit. It is, therefore, fair to characterize the current situation as one in which there are few, if any, career worker retraining programs provided at the collegiate level.

Department of Labor legislation such as the Jobs Training and Partnership Act helps unemployed and dislocated workers (including displaced homeowners) locate training opportunities and provides training stipends. But these provisions have been chronically underfunded, and frequently have not been funded at all. The stipends that are provided typically are limited to living expenses and, therefore, do not help in paying for tuition and other education-related expenses. Moreover, these DOL funds are largely limited to vocational programs and the connection to collegiate programs is tenuous at best. This limits the scope of the education and training that individuals receive through this form of assistance.

What is needed in this regard is a partnership between the federal government, the states, colleges and universities, vocational schools, and the private sector to ensure that an adequate financing is available for those individuals who need retraining in a broad range of areas. Such a partnership should include a commitment by

the federal government and the states to provide stipends to cover the living expenses of dislocated workers and displaced homeowners and their families for the period of retraining. Educational and training institutions should be prepared to reduce or eliminate the tuitions they charge to individuals who qualify for retraining assistance. Companies and unions must also be prepared to do their part by contributing some of the funds necessary to pay for retraining assistance.

Obviously, defining who should qualify for such assistance is a critical aspect of any program designed to meet retraining needs. It cannot, as a practical matter, be made available to anyone who declares that they need retraining. Critics of retraining proposals are prone to exaggerate the potential costs of such efforts by claiming that millions of individuals will queue up for retraining benefits. Proponents for retraining assistance must, therefore, be careful in restricting such aid to individuals who truly need it.

It is also important that retraining assistance not be limited solely to vocational programs of short duration, although this is likely to remain as the primary form of retraining for unemployed and displaced workers. If an individual wishes to shift his or her career in a totally different direction, opportunities should be made available to do so, within the constraint that the new direction is in keeping with the individual's interests and abilities. We should not develop a system and commit resources simply to indulge frivolous or unwarranted shifts of interest. But for the individual with the potential to benefit, the system should provide as much opportunity as it now does for traditional college age students just coming out of high school.

Expanding Opportunities and Services for the Generation in Retirement

The continued growth of the retired population, coupled with longer life expectancies and the extended time over which retired individuals will remain active, provide a challenge to the higher education community to provide enhanced educational opportunities and other services for members of the generation in retirement.

Any effort along these lines, however, should first recognize the high probability that the nature and content of retirement will change in the future. The concept of retirement has only achieved widespread usage in the past half century since life expectancies rose above the typical "retirement age." In the future, not only is the age of retirement likely to increase, we can also expect to see an increasing number of individuals begin new careers after their "retirement." Any response by colleges and universities to the needs and demands of the generation in retirement should take into account these changing realities.

Most members of the generation in retirement who now participate in higher education do so in adult education courses or by enrolling in academic or vocational courses, but not for the purpose of receiving a degree. Relatively little is currently provided to retirees in the form of financial assistance to encourage their further participation in higher education. Retirees can apply for student financial aid, but as in the case of active members of the labor force, the current aid programs are not designed to meet the financial situation of the retired population. It is reasonable to assume that a very small proportion of federal or state student aid is awarded to retirees who are continuing their education.

The principal form of financial assistance available to retirees is the reduced or zero tuition policies that have been adopted by many institutions and states. In a survey conducted in 1984-85 by the AARP Institute of Lifetime Learning, nearly a thousand institutions responded to questions regarding their tuition policies for older adults. Roughly three-quarters of the colleges and universities responding to the survey indicated that they offered reduced or free tuition for older adults attending their institutions.

Among the states, in a 1985 telephone survey also conducted by the Institute for Lifetime Learning, 35 states (70 percent) indicated that their public institutions provided reduced or zero tuitions for older adults taking courses for credit or audit purposes. Of the states having reduced or zero tuition policies, 15 were for students over the age of 60, 5 provided such benefits for individuals older than 62, and 15 had such policies for students older than 65 years of age. Of the 35 states with such policies, 27 (77 percent) indicated that the benefits were provided on a space available basis, where the older student would not be replacing a younger, paying customer.

One obvious step for increasing the participation of older students in higher education is to expand the number of institutions and states that offer reduced or zero tuitions to individuals older than a specified age. This expansion can also occur at institutions and in states that already offer such discounts by reducing the age at which reduced tuitions apply, not limiting eligibility on a space available basis, and offering more courses designed to appeal to this type of older student.

At the same time, it is unrealistic to expect that expansion of zero or reduced tuition policies will lead to quantum changes in the participation rates of retirees in higher education. Nor is it necessarily desirable to encourage retirees to enroll beyond their natural inclination to participate. For someone who wants to participate, whether in degree courses or continuing education, they should be encouraged

to do so. Certainly obstacles should not be placed in their path. But it is not clear that universal postsecondary education for the retired population would be uniformly beneficial.

In addition to increased participation by the elderly and retired in higher education, there are other ways in which colleges and universities can serve an important role in increasing the degree of interchange that occurs between the younger and older generations. In light of rising college costs, a number of new mechanisms of paying for college have been developed or proposed in recent years. Several have already been discussed in previous sections of this paper, including the repayment of loans on an income-contingent basis and the encouragement of greater savings for college.

Two other new financing mechanisms may be particularly useful in making a largely nonfinancial contribution to the reaffirmation of the bond between the generations. One is the growing set of efforts for assuring disadvantaged youth that their college costs will be paid if they complete high school. The other is the expanding set of proposals for linking the receipt of student aid with the performance of public and community service. Both of these "new" ideas in financing hold some hope for expanding the interaction that occurs between the generation in school and the generation in retirement.

Encouraging the involvement of retirees in access assurance programs. In 1981, Eugene Lang, an industrialist and philanthropist, addressed the graduating sixth grade class at the New York public school he had attended a half century before. At the last minute, he shifted from his prepared remarks and instead made a promise to the class that he would pay for their college education if they completed high school and were admitted to a college. The response of the students has been remarkable: virtually all the students did complete high school and went on to college. Reports of the success of the Lang approach has spawned hundreds of similar efforts.

Evaluations of these assured access efforts are relatively few since most of the "adopted" classes have not yet completed high school. But it is already apparent that several elements of what Lang did are critical to any successful effort. One, obviously, is the offer of a full package of aid. Less apparent but just as important is the fact that the offer of aid came at a time early enough so that it made a difference in students' educational patterns. Just as important as the offer of aid and its timing was the commitment by Lang to provide the support services necessary to help students finish high school. These support services included the establishment of a house in the neighborhood as a tutoring center and a place where the students could interact with each other.

Members of the older generation can serve at least two important functions in the evolution of these assured access programs. One is to contribute funds to allow for

the coverage of additional classes of students. But their contribution can also be in nonfinancial terms, especially by acting as mentors and aides in the provision of support services. The mentoring function, which is absolutely critical for the success of such an effort, is where the older population could play an important role in reaffirming the generational compact in higher education. Retired individuals can serve as advisers and as friends to the high school students who are involved in such a program as well as providing some of the much needed tutoring services.

Stimulating greater interaction through community service. Another new financing idea in higher education is to reward students for service they perform through the receipt of financial aid. Such a linkage has traditionally existed in the College Work Study program, where students receive aid for a variety of on-campus and, in some cases, off-campus employment. The difference in these new proposals is that aid would be provided to students for what is designated as public or community service, including a wide range of activities such as work in schools, hospitals, community reconstruction efforts, conservation projects, and many others.

This enhanced linkage between aid and service could be accomplished in a number of ways. The simplest would be to allow or to encourage the payment of College Work Study funds for work designated as community service. Another, broader approach is to extend GI Bill-type benefits to civilian as well as military service, although under such a formulation, those performing military service would typically receive larger benefits than those on the civilian side. Still another variant is to require service as a prerequisite for receiving some or all forms of student aid; such a proposal has been made by the Democratic Leadership Council.

Under any of these approaches, there is a potential for strengthening the bond among the generations to the extent that the service provided by the students is to the elderly population. Such service might be as aides in hospitals or hospices. Or it could be manifested as helping the elderly in their own homes in programs such as Meals-on-Wheels.

Strengthening the Intergenerational Compact in Higher Education

In recent years, there has been a growing tension in the relationship between the retired population and the younger generations. Those who are retired believe that they have earned the Social Security and other benefits which they receive through the taxes they paid while they were working and through their contributions to society. Those currently in the labor force and in school see how much these benefits cost and how much in payroll and other taxes is needed to support current retirees. They wonder whether these benefits will be available when they are ready to retire, especially in light of the declining ratio of workers to retirees that will occur over the next several decades.

Higher education can serve as a medium for reducing these tensions among the generations. Higher education obviously provides the traditional college age group and those who are currently in the work force with the opportunity to improve their lot and to enhance their contribution to society. But it can also serve in many ways to strengthen the bond among the generations, in the variety of ways that have been discussed in this paper.

- Student loan reforms should be instituted that would allow for loan repayments geared to the income of borrowers once they complete their education. This type of change would allow for a rebalancing in the financing compact among the generations, so that loan burdens of today's students do not become obstacles to their ability to pay for their children's education.

- Incentives to save for college expenses should be strengthened to encourage the generation at work to support the educational needs and objectives of their children. Savings also represent an opportunity for the generation in retirement to invest in the future through their contributions to meeting the educational costs of their children and their grandchildren.

- The rules for qualifying for student financial aid should be revised to recognize the difference in the needs of older students currently in the work force from the situation of traditional college age students on which the current needs analysis system has been based. Changes along these lines would facilitate the greater participation of older students in higher education.

- The employer education assistance provisions should be made a permanent part of the tax code to remove the air of uncertainty that has surrounded these important provisions since their enactment in the late 1970's. The 1988 restriction of these provisions to undergraduate students should be reversed to allow for greater career advancement and mobility among older students.

- A partnership of federal and state governments, colleges and universities, as well as companies and unions should be formed to establish a system of student financial assistance for the unemployed, especially dislocated workers and farmers and displaced homemakers who require further education, training, or retraining to regain their place in the labor force.

- Institutional and state policies that reduce or eliminate tuitions for elderly students should be expanded to allow the generation in retirement to improve themselves by enrolling in college or postsecondary courses.

- The generation in retirement should be recruited to serve as mentors and tutors in assured access efforts such as those of Eugene Lang and his "I Have a Dream Foundation." These efforts demonstrate the need and the effectiveness of having older individuals serve as counselors in efforts to improve the basic education and guidance that the school age population receives.

- College students can serve as friends and aides to those elderly who need assistance in hospitals and hospices, as well as in their own homes. This type of activity fits well into many of the proposals that would link the receipt of student aid with the performance of community and national service.

- These recommendations, if implemented, would not require a large infusion of government funds. Additional costs could be at least partially offset by reductions or limits in other higher education areas. For example, savings incentives might be paid for by reducing middle income interest subsidies in the loan programs. The recommendations are intended to draw from all parties in the spirit of partnership with the goal of strengthening the bond among the generations through the medium of higher education.

- Efforts such as the ones listed above will help remind those who are retired of the benefits they received in furthering their education when they were younger and to recognize the importance of maintaining the intergenerational compact for financing of higher education. These efforts would also make more apparent to the generations in school and at work, the importance and the value of supporting the generation in retirement.

Higher Education and Aging Communities: Natural Allies in a Changing World

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For the next decade, at least, the debate over public policy choices will be dominated by concerns for reducing federal budget deficits. Yet, even as approaches to deficit reduction are being debated, the need to increase investments in education and research, to rebuild the public infrastructure, to help children in poverty, and the need to assist families through such programs as long-term care insurance become more pressing. If our politics follow past practice, the debate will come down to a struggle among narrow interest groups for a piece of the public resources pie. That practice may have been sufficient when the struggle was over a piece of an expanding pie; but it can lead to a government immobilized by the absence of public consensus, to unwise short-term policy decisions, and/or to destructive social tensions when the pie is or is believed to be shrinking.

For example, although the public generally accepts the notion that federal budget deficits should be reduced, no effective action is taken because there is no broad consensus on where to cut federal expenditures and/or how to increase federal revenues. No interest group appears willing to give up something for the common good, or, at least, not enough interest groups do. Instead, federal policy makers use the growing Social Security Trust Fund reserve to mask the size of government's operating budget deficit, a short-term expedience which could undermine the long-term solvency of the Social Security system and further diminish the progressivity of the federal tax code.

As another example, budget deficit-driven decisions which have led to transferring much of the bill for higher education from the working population to college students and have cut back public investments in research facilities and equipment may prove detrimental to the future well-being of the nation.

Or, as some observers of our society already warn, there is the possibility of inter-generational conflict between the old and the young over resources as federal expenditures for the growing older population increase. Admittedly, some of these observers are using the argument to advance other agendas, and public opinion polls

and research do not support the warning; but the possibility of intergenerational conflict does exist, particularly when a predominately white baby-boom generation in retirement will be supported by an increasingly minority and perhaps poorer working population.

In short, demographic, economic, and social trends are drastically changing the nature of our political issues and options and have raised the stakes involved in the policy choices. At the same time, perhaps in response to these changes, the body politic is becoming more fragmented, a fragmentation fueled, in part, by the growing influence of political action committees.

Theoretically, at the federal level, competing claims of interest groups are to be judged, compromised, and brought together by the national legislature to serve the overall good. In practice, Congress is buffeted, if not overwhelmed, into inaction by well-funded groups pursuing their own narrow priorities.

Because the current state of our politics seldom rewards bold leadership by elected officials, it falls to forces outside of Congress to take the lead in making it safe for Members of Congress to be courageous in setting spending and taxing priorities. This new role for leadership interest groups will require a change in their politics, conceptually and practically. Conceptually, they must think and act across traditional boundaries of academic disciplines, governmental departments, and narrow interests. Practically, they must develop new alliances that will encourage our policy makers to take broader and longer range views of public policy goals and decisions.

One such natural alliance is between the higher education and aging communities. The well-being of both communities depends on an enduring and strong intergenerational compact, on a vibrant economy to support critical public programs, and on a society that values human development in its broadest sense. Yet, these two influential constituencies seldom, if ever, come together on issues of common concern. More accurately, they may not even recognize their common stake in these issues.

For example, the Commission on National Challenges in Higher Education, consisting of 32 leaders of the higher education community, listed five critical issues facing the nation in its January 1988 "Memorandum to the 41st President of the United States." The memorandum made no mention of the aging population, though the growing older population will impact on or could play an important part in the responses to the challenges.

At the same time, despite the crucial roles higher education plays in educating a productive work force and in generating new knowledge, aging organizations seldom, if ever, involve themselves in higher education policy issues. Yet, these activities are essential to improving the quality of life of older people, now and in the

future. Aging groups seldom testify on research budgets for the Institutes of Health or the National Science Foundation. And a committee of experts on aging convened by the Institute of Medicine to draw up a research agenda on an aging society did not include a representative of the association of the nation's largest research universities.

An alliance between the higher education and aging communities on selected issues could be a powerful force, both as a statement of the importance of strengthening the intergenerational compact and as an effective advocate on behalf of enlightened public policies. Not to seek such an alliance misses an opportunity to counter those who promote intergenerational conflict to advance other goals.

To move from the general to the specific, one man's action agenda for the proposed Alliance follows. The framework for the agenda is four of the five national challenges listed by the Commission on National Challenges in Higher Education. To be placed on the agenda, an issue must serve the direct or indirect interests of both communities and strengthen the intergenerational compact.

Before turning to that agenda, one point about the aging of the population should be stressed in addition to the fact that more people are living longer. People age differently, and the understanding of what is "normal" has changed dramatically over the past several decades. Many of the conditions once thought to be natural consequences of aging are the results of disease, environment and/or life styles and, therefore, are modifiable. We are only beginning to appreciate the human potential across the life course. As we learn more about that potential, society, in general, and the higher education and aging communities, in particular, will be forced to rethink the appropriateness of an approach to old age based on an arbitrary age of 65, on a narrowly defined concept of retirement, and on a limited view of the human potential.

Also, two caveats should be noted. First, in suggesting that the Alliance support increased funding for specific programs or purposes, it is understood that the appeal should be addressed to private as well as to public sources. Indeed, the target of many of the proposed educational efforts is the private sector.

And second, the agenda which follows does not pretend to be a comprehensive listing of shared policy concerns and is not meant to suggest that the policy arena is the sole area for Alliance activity. Indeed, several of the other offerings in this set of papers deal specifically with higher education traditional roles of teaching, research, and public service in an aging society.

Challenge: To Help Ensure a Productive Economy

The nation's ability to support programs such as Social Security and Medicare

and programs assisting higher education will depend on the nation's ability to generate an increasingly productive economy. Also, older persons desiring to continue to contribute to society will need access to high quality undergraduate and graduate studies. Further, higher education has special responsibilities for the education of the work force and to produce new knowledge needed to meet this challenge.

To help ensure a productive economy, the Alliance should

- Advocate increased support for elementary and secondary education.
- Support increased funding for university-based research and for construction and renovation of research facilities through programs of the National Institutes of Health and the National Science Foundation.
- Support programs to increase and improve the quality of the supply of teachers at all levels of education, including incentives to attract our most qualified young people to the teaching profession. At the same time, the higher education and aging communities should work together to devise and implement programs which would tap the knowledge and skills of older persons as teachers, assistant teachers, and/or tutors, particularly for schools serving disadvantaged neighborhoods.
- Support expansion of programs which provide displaced workers, including older workers, job training and/or other educational opportunities leading to new employment options, realizing that the work place and work conditions must be redesigned to accommodate needed older workers, to reverse the trend toward earlier retirement for persons willing and able to work longer, and to meet the needs of families caring for children and/or older relatives.
- Promote the study of the potential of older persons to contribute to society, whether as paid employees and/or volunteers, and how to encourage later life careers.
- Support a national tax(es) (for example, on oil, gasoline, cigarettes, Social Security income of affluent elderly persons, and/or a surcharge on federal income taxes) dedicated to reducing federal budget deficits, recognizing that large deficits are a drag on economic growth, limit options for expanding needed federal programs, and are a potential source of intergenerational tension.

Challenge: To Strengthen the National Commitment to Expanded Educational Opportunity

Four trends combine to make this challenge a pressing intergenerational issue. In an increasingly technology-driven economy, the importance of education for individual and societal economic advancement increases. Yet in the year 2000, one-third of the younger population, the work force when the baby-boom generation will be in retirement, will be minority and college enrollments of minority youths are currently declining. Families are contributing less to the college education of their children than in the past. And with the rapid pace of technological change, with changes in life styles, and with the extension of life, people will need education across the courses of their lives to keep up with technology and to pursue career changes and/or avocations throughout their lives.

To help strengthen the national commitment to expanded educational opportunity, the Alliance should

- Support expansion of such proven programs as Head Start, Upward Bound, and child health and nutrition programs.
- Support expansion of grant assistance and work-study programs for needy students.
- Propose that the Social Security Trust Fund reserve, expected to hit \$1 trillion early in the next century, be used to capitalize a college student loan fund, with payback tied to an increase in the borrower's Social Security wage tax, recognizing that such a program would "protect" the reserve for the purpose for which it was created: helping to pay Social Security benefits when the large baby-boom generation retires.
- Support creation of a long-term care insurance program based on a social insurance principle, recognizing that concerns about paying the costs of long-term care may deter families from contributing to the costs of their children's and grandchildren's education.
- Promote and develop undergraduate and postgraduate studies designed to meet the intellectual needs of the older population, recognizing that society will increasingly need the continued contributions of older persons and that future cohorts of older persons likely will be better able and willing to pursue late-life careers.
- Conduct a joint effort to eliminate illiteracy in this country.

Challenge: To Address Human Needs and the Quality of Life

It has been said that the quality of a society can be determined by how it treats its children and old people. While those measures remain important, a third measure should be added: the overall quality of a society can be judged by the economic, intellectual, and health status of its people upon entering old age. As noted previously, research has shown that the quality of life of an older person is determined in major part by life style choices, environment, educational opportunities, etc. across the person's life, and that many of the conditions once considered the natural consequences of aging are modifiable. Therefore, tomorrow's older persons have a huge stake in how our society addresses human needs and quality of life issues of people of all ages and in the generation of new knowledge needed to improve the health and well-being of people generally. For its part, higher education has a special responsibility in the generation and dissemination of that new knowledge.

To meet the challenge of helping the nation address human needs and quality of life issues, the Alliance should

- Promote increased federal support for basic and applied social research to generate knowledge needed to improve the nation's social welfare policies and social service programs.
- Support a significant expansion of research and educational activities devoted to health promotion and illness prevention, recognizing that improved health is critical to improving the quality of life of people of all ages and to slowing the increasing medical expenditures for and by older persons.
- Support the strengthening and expansion of key federal data collection programs, recognizing that such data are needed to develop sound social policies, that federal data collection and dissemination efforts generally have been reduced in recent years, and that data important to devising policies responsive to the needs of the aging population often have not been collected at all.
- Promote public understanding of the interdependence of generations and the necessary roles this interdependence plays in achieving societal progress.

Challenge: To Help Restore Fundamental Values and Ethical Behavior

There is widespread concern about the erosion of ethical standards in our society, from the behavior of some business and political leaders to plagiarism in academia to downgrading the value of public service to the absence of courses in ethics in many university professional schools. Given that the concept of a "profession" began as a group of individuals coming together around a set of professed ethical standards, it is ironic that courses in ethical thinking are not required in many of our professional education curricula. Further, advances in medical research and new technology, changes in the family structure, and the aging of the population are creating new situations involving basic values and ethical decisions. And, of course, we, as a society, will not meet the challenge of educating our children, particularly our children in poverty, unless teaching and related public services become valued and rewarded occupations.

To help restore respect for fundamental values and ethical behavior, the Alliance should

- Promote the study of ethical issues generated by a changing world, including development of an ethic to address the question of to what purpose(s) should the added years of human life be put.
- Encourage efforts to promote the value of public service among students and older persons, developing model intergenerational projects within colleges and universities and with the communities in which the institutions are located.
- Support efforts to reduce the influence of political action committees on Congressional elections, recognizing that PACs tend to encourage the advancement of narrow interests, while the goal of the Alliance is to encourage policy makers to raise their horizons and to consider the interrelatedness of issues when making policy decisions.

Final Thoughts

One should not minimize the impact that an alliance of the aging and higher education communities could have on the politics of the nation. Together, without additional partners, the two communities represent considerable political power and influence, enough in some Congressional districts to make it safe for the representative to be courageous. Further, by coming together, these two influential communities would encourage some other interest groups to lift their horizons and think about their stakes in issues that don't seem to affect them directly.

The case for an alliance of these communities has been based on the self-interest each has in avoiding intergenerational conflict over resources, in a productive economy, and in a society which values human development. However, there is an equally compelling intellectual and moral reason for these two communities to come together. To meet many of the challenges of our changing world, including the aging of the population, we will need to develop responses based on a multidisciplinary life course view of human development. The academy, because of its privileged place in our society and because of its multidisciplinary character, has a responsibility to pursue and develop this life course view from a multitude of perspectives. At the same time, for whatever other purposes the added years of human life should be put, one purpose should be to promote, for the benefit of future generations, such a view of human and societal development from the perspectives of those who have traveled much of the life course.

The long list of issues on which the higher education and aging communities share interests is not intended to suggest that the two communities will never be in conflict. To the contrary, an issue such as mandatory retirement would seem to divide much of the academic community from positions of the aging advocates. But here, too, trends in our changing society may blur, if not eliminate, the conflict.

Despite the fact that faculty may work until age 70, surveys indicate that faculty members tend to retire in their sixties, following the trend of persons in other occupations. Thus, the concern of hoards of incompetent and/or expensive senior professors hanging on indefinitely may be exaggerated. Also, there appears to be a shortage of young persons pursuing graduate degrees leading to higher education teaching/research careers. Thus, universities may be seeking ways to retain proven teachers past the retirement age of 70, or at least to reverse the trend toward early retirement. And finally, a number of higher education institutions are experimenting with emeritus organizations which tap the expertise of retired faculty and professionals for the benefit of the institution and broader community and which give meaning to the later years of emeritus employees.

It is, perhaps, on issues which divide the two communities that the best argument for establishing an alliance can be found. By talking to each other, these two influential constituencies may be able to develop creative responses to such issues based on sound data and progressive human values. In doing so, they would be setting an example for other interest groups to follow.

***Part II: Gerontology Within
Higher Education:
Teaching, Research, and
Service***

Gerontology and Higher Education: Continuing To Open the American Mind

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Whether colleges and universities have contributed to the closing of the American mind, hence failing both their students and society, is an idea that can be debated on its merits. The contribution of gerontology in higher education to the opening of the American mind regarding the facts and implications of personal and population aging, on the contrary, is not debatable. Higher education has participated, and continues to participate, in a revolutionary transformation of both the personal and public perception of human aging. The roots of interest in gerontology in higher education lie in the experience of colleges and universities during and immediately after the Second World War.

During the war, both public and private institutions of higher education came to be perceived, and to perceive themselves, as natural storehouses of essential information and ideas that could be mobilized in the public interest. This perception appeared to justify the presumption that, in doing the public's business, institutions of higher learning warranted public support. Public support of higher learning after the war was indeed very generous, as illustrated particularly by the profitable marriage of shared interests between government and the universities involving particularly the National Institutes of Health and the National Science Foundation.

Research and teaching regarding human aging became a vital part of these post-war developments. A public/private partnership in aging research flourished, and The Gerontological Society of America played a vital leadership role. The GSA was founded in 1945 as a multidisciplinary organization committed to the integration of biological, behavioral, and social scientific research and training in gerontology and its roots lay substantially in the universities. GSA leadership knew the potential interests of colleges and universities in aging from the inside. By the 1950's, gerontological research and teaching centers associated with universities were evident across the country. By the end of the decade, a consortium of these centers produced the initial handbooks on aging that summarized research findings and assessed their personal and societal implications. These handbooks, and much of the research reported in them, were funded primarily by one or another of the National Institutes

of Health, occasionally by some other federal agency, and by a few private foundations.

The 1950's produced the first White House Conference on Aging, and academics were prominent in the planning and execution of this conference and the three which have followed at the beginning of each decade. The second White House Conference on Aging (1961) is particularly notable for institutions of higher education because that conference proved to be the prelude to two significant pieces of social legislation in 1965 responding to the aging of the American population—Medicare/Medicaid and the Older Americans Act. The Older Americans Act proved to be particularly important to higher education because one of its titles mandated significant resources for the development of gerontological research, education and training in institutions of higher education. Beginning in 1972, literally millions of dollars were offered and accepted by a significant number of colleges and universities in America, the large and the small, the excellent and the ordinary. In 1974, the Congress mandated the development of the National Institute on Aging within the National Institutes of Health.

At least since the Second World War, the usual federal strategy for concentrating the attention of colleges and universities on issues that national, political, scientific and intellectual leadership perceives to be important is to purchase the desired concentration. Of course, most colleges and universities are too complex and subtle to be purchased crudely. But, by and large, higher education has been attentive to the marketplace of resources as well as to the marketplace of ideas. Academics and their institutions discovered that they can do well financially while doing the public good. Gerontology was not an exception. Consequently, gerontology in higher education now has an identifiable record of accomplishment. This record of accomplishment underlies my thesis that gerontology in higher education has opened and continues to open beneficially the American mind regarding human aging and the societal implications of population aging.

Aging in the Marketplace of Ideas

A substantial federal investment in gerontological research and teaching over the past four decades has produced notable contributions to both public and scientific understanding of why and how individuals and populations age and to a more enlightened public discussion of the societal implications of an aging population. Social institutions affect how we age. But, equally important, aging populations affect social institutions. By federal budget standards, our national investment in generating and transmitting reliable information about human aging is small. The total budget of the National Institute on Aging, NIH, tends to be less than the administrative component of the National Cancer Institute budget. The smallness of the

investment in aging, however, only serves to make the outcome more notable.

In four decades, this nation has witnessed a revolution in both the perception of processes and problems related to aging and to identification of an increasingly broad range of options available for satisfactory personal and social resources to aging. Scientific research laid the groundwork for realistic optimism about the capacity of individuals and societies to invent alternative futures of aging. Clinicians in the helping professions have moved progressively from a dominant therapeutic nihilism regarding the inevitable decrements of aging to interest in exploring the realistic modifiability of or compensation for these decrements. An even more remarkable aspect of the revolution in perception of aging is a growing sense of empowerment among older persons who, in increasing numbers, are entering the last quarter of their lives better educated, in better health, more secure financially, and experienced in being active participants in community life. The scientific community and government have been wise to attend to issues of human aging. An increasingly informed older adult population expects and is prepared to insist on appropriate attention. What have gerontological scientists and teachers, working primarily in institutions of higher education, delivered which has influenced informed perceptions and responses to aging in useful ways? A few illustrations will suffice.

Understanding the demographic transition. The worldwide aging of human populations is no longer news. Long life is now a promise that has also sometimes become a threat because, in developed societies, one can no longer depend on dying at a "convenient" age. In later life, an added year of life cannot be assumed to be an additional quality year in which appropriate independence and a capacity for self-care are maintained.

Average life expectancy at birth has increased dramatically in this century from about fifty years to almost eighty years. We owe this change, historians of health and epidemiologists tell us, less to medicine than to public health and education. Who gets the credit for long life is not so important as understanding the personal and social implications of increased life expectancy.

Three particular implications of changed life expectancy deserve and have received special attention. One is the importance of focusing public discussion of aging not on the number of older adults but on the capacity of older adults to maintain a personally satisfying and socially acceptable capacity for self-care. Fortunately, the great majority of older adults live out their lives with competence and with satisfaction in a community. The minority of significantly impaired and dependent elderly who require a great deal of long-term care is, however, large enough to be troubling. This is why long-term care has become and is likely to remain one of the most important public policy issues on the nation's agenda for at least the remainder of this century.

The second notable implication of population aging is the increasingly apparent mismatch between the needs of an aging population and our current institutional arrangements for meeting needs. The nation has been playing "catch up" with its institutions for fifty years as its population has aged. We have had more success in some institutional areas than others. Income maintenance in the retirement years is, by most criteria, an area in which social security public policy has been generally successful. Our health care system in recent decades has taken note of and responded reactively to the distinctive health care needs of older populations in the development of Medicare, hedged with budgetary controls, and with the promotion of geriatric health professionals and services. Our most obvious failure in adult health care is to develop and finance something more adequate than nursing homes for long-term care. Long-term care remains a conspicuous national failure of public policy. Competing with this failure are distinctively inadequate public policies regarding housing and transportation.

The third notable implication of population aging is that it has stimulated, perhaps predictably in our competitive society, rather inconclusive discussions of generational equity in the allocation of societal resources. A nation that has never thought deeply about equitable distribution of social resources over the life course clearly has developed little compelling evidence and no consensus on which to base a policy of generational equity. Intuitively one would expect both the students and faculties of universities to be intensely interested in issues of generational equity. Adults are principal supporters of the financially dependent younger persons in higher education, and younger faculty have easily identifiable interest in the effects of retirement policies on their career advancement. Generational equity is now a recognizable issue in our political life although the terms of an impending debate remain largely unfocused.

Diversity of aging. An educated person is no longer permitted in informed company to refer to **the elderly**, as though at age 65 adults become part of an undifferentiated mass of humanity. Older adults are differentiated and differentiable first, of all things, by age. Sometimes, to make a point, gerontologists note that among those over age 65, there are the young old (65-75), and old (75-85), and the old old (85 and over). Acute observers of older adults recognize the significance of this distinction and understand that the problems and expectations of the younger old are distinctly different from those of the older old. But beyond age, older adults appear as male and female, bright and dull, sick and well, rich and poor, and with a variety of subcultural backgrounds. Practically, this variety ensures that public policy regarding **the elderly** is not likely to be appropriate or effective. Effective public policy for an aging society such as ours probably must be founded on the principle of maximizing options.

Theoretically, the observed variety among older adults is important because it must be explained. Processes of aging and the experience of aging are historically as well as currently different. Changing life expectancy cannot be explained reductionistically by biology; rather, it requires an understanding of how biological potential interacts with changed environments to produce different outcomes. Biological understanding of aging, therefore, calls our attention not only to the necessary conditions of human aging but also to the potential for living which biology makes possible under different environmental conditions. This changed way of thinking alters fundamentally our perception of aging processes. Some aspects of aging are potentially modifiable. Scientists who study aging have had the opportunity in recent years to rediscover one of the great maxims of their experimental tradition: If you want to understand something, try to change it. Modifiability of some aspects of aging is no longer just conjecture.

Past is prologue. Human diversity is a product of the dynamic interaction of individuals in particular social context in which human groups allocate the resources on which human development depends. Developmentalists have demonstrated repeatedly in longitudinal research that the best predictor of the behavior or condition of an organism at T_1 is its behavior or condition at T_2 . Past is prologue. This simple observation is at the heart of the thinking of epidemiologists who investigate how risk factors of various kinds are related to health and illness. If one wants to reduce the risk of some unwanted outcome such as cardiovascular disease, then one reduces behavior known to be unhealthy such as cigarette smoking, suspect dietary practices, physical inactivity, and poor stress management. Further, poverty, ignorance and social isolation are not good for one's health or general well-being. Both the logic and the evidence about the precursors of health and well-being in the adult and later years are impressive.

In the behavior of earlier development we construct to some degree our future as older adults. To approach age 65 after an adult lifetime of ignorance, poverty, and social isolation is to give up, for starters, six to eight years of life expectancy and to have a significantly elevated risk of dependency prior to death. The more closely one studies the distribution and impact of ignorance, poverty, social isolation and unhealthy personal behavior among adults, the more obvious the devastating impact of these factors on later life becomes; and the more obvious it becomes that these conditions reflect failed public policy which could—probably should—be modified. Gerontologists who focus on the life course, not just the later years, are among the first to worry about the deprivation of children. Deprived children, adolescents, and young adults are at high risk for trouble in their later years.

The limits of modifiability. The rediscovery of the experimental maxim of understanding through attempting to change requires an immediate caveat. Scientists have no automatic right to change anything or anyone just to demonstrate that change is possible. Ethical issues are involved. My point is, rather, to stress that a fundamental change has occurred in our thinking about later life. The scientific community, and increasingly the lay community, now consider many aspects of the experience of aging to be modifiable. There is no longer any question that geriatric medicine has learned a great deal of useful biomedical and social scientific information relevant to the management of illness in later life. We know a great deal about the beneficial effects of exercise in later life and about how to assist disabled older adults to develop and maintain a positive self-image that improves their capacity for self care. We know a great deal about cognitive capacity, how and why we lose it, and how it can be retained or regained. Social scientists know that the experience of aging for older adults is not so much an expression of what nature requires as it is what social groups prefer and value as they choose to allocate social roles and resources. Social intentions and social policy matter. Institutions of higher education matter.

Gerontology in Higher Education: The Way Forward

Institutions of higher education can and should make a difference in how an aging nation imagines alternative responses to and responds to its aging. Colleges and universities have traditionally perceived the opportunity and accepted a responsibility for shaping, at least indirectly, public consensus, intentions, and related public policy on important issues. The leadership of colleges and universities is very familiar, perhaps too familiar, with the claims of special interest groups on educational time and resources. Obviously higher education cannot respond to all the claims for special attention it might receive. Is gerontology just an ordinary special plea for attention in higher education? A quick affirmative response is, in my view, too facile, convenient, and comfortable.

On the contrary, my thesis is that there are elements of both necessity and opportunity for the integration of gerontology into the mainstream of higher education. Higher education, like scientific research, is essentially a public enterprise whose public support is appropriately contingent in part on perceived societal return on investments. Prior societal investment in gerontological research and training has provided generous returns in the form of information that has transformed the American mind regarding the implications of and possibly effective responses to human aging. At a minimum, each institution that has benefited from earlier public investments in gerontological programs should be asking whether it has justified that investment with the development of sound and continuing programs. There is yet another element of necessity in the response of higher education in gerontology: That is the fundamental national importance in understanding the societal implications of human aging.

When in 1976 the Founding National Advisory Council of the National Institute on Aging laid out a national research and training agenda in its first required report to the Congress, the carefully considered title of the report was "Our Future Selves." This title clearly embraced national values emphasizing individuality and personal responsibility and underscored a simple fact: The implications of human aging for individuals and for society involve not some abstract, dependent collectivity called "the elderly," who have problems with income maintenance, health care, and housing. Contemporary adults, the certain inheritors of the proximate future, will themselves have the experiences of those who are currently older unless we invent an alternative future. If young adults began today to construct an alternative future for older adults that would improve on the present, it is younger adults, not the currently old, who would be most likely to benefit. Institutions of higher education with no interest in gerontology, consequently, would appropriately be accused of depriving students of exposure to and a chance to participate in the discussion of one of the most fundamental issues of our time.

Interest in gerontology does not necessarily mean the creation of a gerontology center or even a special program. That connotation trivializes the issue. It does mean the assurance that fundamental biological, behavioral, and social information about human aging would be integrated into the educational opportunities offered. It does mean that important issues of gerontological equity would be appropriately discussed by design, not just by chance.

Beyond necessity, gerontology in higher education is better considered as an opportunity to do some of the things good educational institutions genuinely value. The best institutions work hard to engineer opportunities in which the ethical dimensions of social issues can be discussed and the social implications of technological issues from the perspective of various disciplines can be illustrated. It would be difficult to find a vehicle better than gerontology to achieve such aims.

It has been my experience for over two decades in a university with a long and deep commitment to research and teaching in human aging that students of all levels grasp quickly and recognize the intellectual challenge of issues like "generational equity in the distribution of social resources" and "social security as social contract." Students are quick to understand that, in discussing human aging and older adults, they are discussing their grandparents, their parents, themselves. Whether gerontology is offered separately or mainstreamed in established courses, it is popular for a sound reason: Gerontology addresses recognizable issues of personal and societal significance.

While the various background papers for this meeting of gerontologists in higher education with experienced academic administrators might be perceived as a special

plea for institutions of higher education to be interested in gerontology (with the assumption that it is someone's obligation to make a convincing case), I would propose a different tack. If my thesis is correct, and gerontology addresses some of the most fundamental important personal and social issues in this nation at this time, then the question should be: Would an institution of higher education knowingly not include a gerontological perspective, if not a gerontology program, as a part of its research and teaching obligations?

Responsibilities of Higher Education to Research on Aging

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The Diversity of Research on Aging

Is aging the inevitable loss of functional capability over time followed by eventual death?

In stark contrast, is aging the summation of those biological and sociological strategies by which one population successfully acquires an improved ability to perform, to cope, and to survive relative to a less capable population?

What is the full potential for intellectual and physical performance in healthy old age?

When does aging begin, and is it best considered in a developmental perspective?

Are there limits to lifespan?

How does manipulation of the environment influence the quality and quantity of life for elderly individuals?

How does the growing proportion of older individuals in a population influence the fabric of society?

These kinds of questions pose a fascinating challenge and opportunity to higher education. Sophisticated pursuit of such knowledge entails use of the philosophies and methodologies of virtually every academic discipline and profession.

Numerous published volumes already describe theory, accomplishment and speculation for research on aging in the behavioral, biological, clinical and social sciences and in the humanities. Clearly, it is not possible for a single author to encompass credibly this vast field within the limited context of the present paper. Therefore, a seemingly rational strategy is to present a nontechnical and multidimensional overview of the excitement, frustration and societal importance of research on aging from the perspective of personal disciplinary expertise which, in this case,

happens to be biology. An excellent multidisciplinary sampling of information for those readers who desire the recommendation of a next step with which to pursue this matter in greater depth are the three presently available editions of *The Handbooks on Aging*, a multi-volume series edited by James Birren and his various volume editors (Binstock & Shanas, 1985; Finch & Schneider, 1985; Birren & Schaie, 1985).

The questions raised thus far by research on the biological nature of aging clearly are intellectually challenging and of considerable societal importance. Within sight, perhaps, is the eventual capability to allow most experimental animals, as well as most people, to live long enough to attain old age. Prevention of disease and enforcement of rational lifestyle may allow a growing proportion of our population to approach its maximal lifespan in reasonably good health and functional status. However, this growing knowledge base also indicates that we do not yet have the foggiest notion of what aging is or even why or how a phenomenon such as apparent maximal lifespan ever occurs.

The boundaries of research on the biology of aging recently were expressed in the context of the following sets of issues (Adelman, 1988b). 1) Research on afflictions of old age addresses diagnosis, basic understanding, treatment and/or prevention of problems of the elderly. Representative biological subject matter includes the neurobiology and genetics of Alzheimer's disease, the endocrinology and metabolism of diabetes mellitus, and the increased prevalence of hypertension among older Blacks. 2) Research on fundamental processes of aging addresses how, why, and when functional change and finite lifespan are expressed at the levels of molecules, cells, tissues and organisms of all kinds in the absence of disease and other extrinsic problems of lifestyle and public policy. Representative subject matter includes the modified architecture of several kinds of enzyme molecules, changes in hormone- and drug-receptor interactions, and the general decline in responsiveness of the immune system. Included within this issue also is the mystery about when aging begins. Ogden Nash suggests that "Senescence begins and middle age ends the day your descendants outnumber your friends" (Nash, 1975). However, the decline of at least certain physiological regulatory mechanisms begins shortly following birth, or even earlier (Adelman, 1970). 3) Research on the potential for performance in healthy old age addresses identification, basic understanding, and training for optimal exploitation of physical and mental capabilities. Representative subject matter includes the influence of genetics, health and lifestyle on the biological component of the capability to perform as an older athlete, scholar, artist, worker, and sexual partner. 4) Research on societal population aging addresses the social, behavioral, economic, political, ethical and biological impact of human population growth when the most rapidly growing segment of that population is the elderly. Representative biological research topics include the impact of an AIDS-like epidemic on the availability of nursing home beds for the elderly, the impact of reduced fertility on the fate of the traditional backbone of old age-support by the family in the People's Re-

public of China, and the shifting agricultural and nutritional needs in response to the change in population dynamics.

Determinants of longevity. The overwhelming majority of available data from biological research on aging focuses on the description of determinants of longevity and on afflictions of old age. Most information about human lifespan is found in the mortality statistics for various populations of people. For example, in British India during the 1920's, the average individual lived for approximately 25-30 years, whereas the oldest members of this population lived for approximately 100 years (Comfort, 1956). In the United States today, the average individual lives for approximately 70-75 years, whereas the oldest members of this population live only very slightly in excess of 100 years (Brody & Brock, 1985).

Throughout recorded human history apparent maximal lifespan probably has not changed. However, the proportion of the population which survives to approach its apparent maximal lifespan increased as its environment improved; primarily as a consequence of the abolishment of specific kinds of infectious disease, as well as improved nutrition. Claims of isolated populations in which numerous individuals attain ages of 130-150 years, such as in Russian Georgia, largely represent the exaggerated consequence of inaccurate birth records (Comfort, 2nd ed., 1979; Adelman, 1989). Claims of accelerated aging, such as in those young individuals who are afflicted with progeria, generally fail to distinguish between symptoms which do and do not mimic those of old age (Comfort, 1979) in a manner analogous to the earlier impressions of the impact of radiation poisoning.

Further complicating the eventual understanding of maximal lifespan is the modulating influence of an almost incredible array of environmental factors. For example, the well-documented tendency for women to live longer than men actually may be jeopardized by the feminist movement. Some epidemiologists believe that so many women today are dying from lung cancer as a direct consequence of increased cigarette smoking during the 1940's and 1950's that the gender-specific advantage in longevity may be narrowed significantly (Glynn & Cullen, 1985; Miller & Gerstein, 1983; Surgeon General, 1980). Of course, whether this outcome was brought about by feminist free choice and/or a federal policy that continues to subsidize the tobacco industry remains to be seen. As a second example of complicating environmental factors, consider warily the observation that very old men who are married to younger women live longer than very old men who are married to older women (Foster et al., 1984). One also wonders about the response by his battle-ready troops to whom Frederick the Great is purported (Comfort, 1979) to have proclaimed, "Sons of bitches! D'you want to live forever?" Recommended general readings on the impact of social relationships on health and mortality (House et al., 1988) and on the nature of a variety of extrinsic factors which amplify the effects of aging (Rowe & Kahn, 1987) provide additional insight.

One experimental approach to the understanding of lifespan entails investigation of the comparative longevity of some of the more familiar animal species.

"The horse and mule live 30 years, and never hear of wine or beers.
The sheep and goat at 20 die, without a taste of scotch or rye.
The cow drinks water by the ton, and at 18 is mostly done.
The dog at 15 cashes in, without the aid of rum or gin.
In healthful milk the kitten soaks, and then in 12 short years she croaks.
The modest, sober, bone-dry hen lays eggs for nogs, then dies at 10.
But somehow we outlast them all on coffee, tea or alcohol —
which proves it sure can't hurt you none to have yourself a lot of fun!"
(Unknown, adapted from a sign in a London pub.)

The preceding message addresses the issue of holistic health and aging. However, and more to the point, it also presents the perplexing puzzle confronted by the investigator who wishes to design a laboratory experiment on the essence of lifespan in which the experimental subject outlives the investigator. The productive, laboratory lifespan of a biologist today is approximately 20 years, plus or minus administrative inclinations. How in the world does one design an experiment on the essence of lifespan and hope to learn the outcome when the subject is a Galapagos tortoise which lives approximately 150 years, or even a human being who lives approximately 100 years?

One extremely popular alternative experimental system which may greatly further our understanding about lifespan is based on the suggestion that the information responsible for a finite lifespan of an individual may be contained within cells that are isolated from that individual (Hayflick & Moorhead, 1961). When normal human tissue is removed from the body and placed in laboratory glassware under carefully defined environmental conditions, the cells begin to reproduce. Cell division continues until the cells form a single monolayer which completely covers the surface of the piece of glassware, at which point cell division ceases. When the monolayer of cells is scraped from the surface of the glassware, divided into two equal portions of cells and placed into two new pieces of glassware of the same size and shape as those of the original, cell division resumes; but once again, only until the two new monolayers are formed. Thus, the population of isolated cells is doubled in number by this manipulation. Such doubling of the isolated cell population could be achieved only 50 times, plus or minus normal biological variation, following which these cells lose their ability to divide and then eventually die.

Evidence that such finite capability of isolated cells to divide probably is related to lifespan of individuals from which the cells were derived includes the following two observations: 1) The maximal number of cell population doublings achieved in

glassware decreases as donor age increases (Martin et al., 1970). 2) The maximal number of cell population doublings achieved in glassware increases as apparent maximal lifespan of the donor species increases (Rhone, 1981). Ongoing studies of this model system in many laboratories around the world are utilizing the methodologies of genetic engineering in an effort to identify those genes which contribute to the expression of a finite capability for cellular proliferation.

Afflictions of old age. Biological research on afflictions of old age generally addresses declining functional capabilities. Typical examples of physiological parameters that are reported to decline during aging include the velocity of nerve impulses, rate of blood flow through the kidney, muscular strength, and so on (Shock, 1960). Most of these studies offer the distinct impression that virtually all physiology is in a state of decline as people age beyond approximately 30 years.

However, it now is apparent that at least many physiological capabilities which deteriorate during aging probably do so unnecessarily because they represent artifactual manifestations of disease, inappropriate lifestyle, and uninformed social policy. Examples of such artifacts include the capabilities for sexual activity, for metabolism of glucose, and for cardiac performance. The previously reported decline in sexual activity of aging men may reflect measurements obtained from ill or institutionalized males who were segregated from women (Warner et al., 1985). The impaired ability of older people to metabolize sugar, glucose intolerance, is accentuated by diabetes and obesity, and is minimized by the appropriate regimen of diet and exercise (Chen et al., 1987; Reaven & Reaven, 1981; Leiter et al., 1988). The previously reported impairment in cardiac performance of elderly people is no longer apparent when individuals with heart disease are removed from the population under study with the aid of newly improved diagnostic techniques (Lakatta, 1985).

Intervention. Research on the extension of lifespan and on intervention with the afflictions of old age has provided some success. The most dramatic example is the impact of modest food restriction on freely eating rats, because this represents the only known intervention that apparently extends both mean and maximal lifespan (McCay et al., 1935; Masoro, 1985). The restricted animals live twice as long as, and probably enjoy a better quality of life than rats that eat as much as they please. The onset of functional decline generally is delayed, and the expression of most age-associated disease is prevented or delayed (Masoro, 1988). One alternative interpretation of these data is that the nutritional behavior and accompanying lifestyle of freely eating, laboratory rats is detrimental to their health and longevity.

Somewhat related studies in people are both more complex and controversial. 1) First and foremost, medical ethics prevent repetition in people of the food restriction

studies already performed in laboratory rats. It seems likely to reflect, however, that if it were possible to devise a regimen of diet and exercise which extends quality and quantity of human life, then natives of southern California by this time should have achieved a distinct advantage of such kind (ignoring the impact of smog, freeways, etc.) with respect to the remainder of the U.S. population; something which has not occurred. 2) On the other hand, a carefully defined population of men who are at great risk of sudden death by heart attack if they so much as climb a flight of steps or walk a block from home, recently was reported to exhibit a significant increase in quality of life and in life expectancy when they were subjected to the regimen of diet and exercise prescribed by Pritikin (Weber et al., 1983). 3) Finally, there are also data which to some degree suggest that the fatter you are, the longer you live (Andres et al., 1985). Moderately obese men, who do not succumb to heart attacks in their early fifties, live longer than their leaner counterparts. This observation does not diminish in any manner the realization that obesity is an enormously important risk factor for diabetes, hypertension, and other undesirable conditions. However, what better substantiation of the potential benefits of limited overweight could one expect than the recent upward revision of tables for lowest mortality relative to body build and height by the Metropolitan Life Insurance Company (Harrison, 1985)?

Future directions. It was suggested not long ago that all research on the biomedical nature of aging should be brought to a grinding halt because this type of new knowledge is potentially more detrimental than beneficial to humanity (Sinsheimer, 1978). After all, how can we justify public support of research which eventually, whether by serendipity or design, will increase the maximal lifespan and/or numbers of elderly people when we are not yet capable of adequately housing, feeding, clothing and otherwise caring for our frail elderly today? Such a position seems quite analogous to earlier protests against the onset of the atomic era, the age of genetic engineering, and so forth. It is noteworthy, however, that the cleverly written challenge to the ethics of research on aging in reality very responsibly endorses the need for a research agenda which emphasizes cross-disciplinary collaboration, as well as communication between the research community, service providers, policy makers, and even the elderly. Moreover, in order to place the ethics of biomedical gerontology in proper perspective, also consider that

"King David and King Solomon
Led merry, merry lives
With many, many concubines
And many, many wives;
But when old age crept o'er them
With its many, many qualms,
King Solomon wrote The Proverbs
and King David wrote the Psalms" (Dragstedt, 1969)

The current status of research on the biology of aging is overwhelmingly descriptive, excessively focused on the afflictions of old age, minimally understood at the level of underlying mechanisms of fundamental processes which occur in the absence of disease, and horrifyingly complicated by the influence of disease and of behavioral and sociological factors about which most biologists know too little (Adelman, 1987; Adelman, 1988c; Adelman, 1988a). How does one individual acquire the capability for greater life expectancy in good health than does another individual? How does one species acquire the capability for greater longevity in good health than does another species? What are the implications for people who are able to maintain good health, as well as the integrity of functional capability throughout lifespan simply by controlling their environment? Is maximal lifespan in good health realistically susceptible to experimental manipulation? What will be done with all of those potentially healthy and productive elderly people? What will be done with those institutions that will regard such an accomplishment as nothing less than catastrophic? The results of research on the biology of aging eventually will change the fabric of society as we know it today, whether or not our society is prepared to deal with such change.

APPENDIX

Academic Program Development

A centralized program of research on aging can be utilized to facilitate the development of aging-related academic programs of research, education and training, service models and public policy throughout the schools and colleges of universities. Obviously, there is no single, correct manner to achieve this goal. The array of substantive topics within the centralized research program, the constellation of interacting academic departments, and the host of other environmental factors which are unique to each institution of higher education will influence the scope, size and likelihood for success of gerontological development. This appendix presents the Director's personal view of relevant accomplishments and struggles involving the Institute of Gerontology at The University of Michigan during recent years as one successful case study.

There is a rich history of program development in aging at The University of Michigan. Awareness of the following background information is critical to the understanding and appreciation of ongoing strategic planning. 1) Academic commitment to gerontology began as early as the 1940's. 2) The Institute of Gerontology was created in 1965 as the first academic program in gerontology to be established by a Public Act of any State Legislature. 3) Its legislative mandate was and continues to be the pursuit of research, education and public service of importance to the elderly. 4) The Institute was designated a free-standing entity that reports to the University Vice President for Academic Affairs, and is independent of the Schools and Colleges. 5) There is a well-established and highly valued tradition at The University of Michigan of internal support of such institutes with justifiable amounts of facilities and funding. 6) Last, but by no means least, the Legislative Act which created the Institute of Gerontology also included the annual appropriation of a generous, discretionary budget which has grown progressively to its current level of more than one million dollars from University General Funds for the fiscal year 1989-90.

During its first 17 years of existence from 1965 until 1982, the Institute of Gerontology established a pioneering and historically important legacy in the development of social policy, applied social research, and short-term professional and pre-retirement training. Its impact was enormous on the network of service providers and policy makers concerned with aging throughout the State of Michigan, as well as nationally and internationally. However, its considerable accomplishments by a largely professional, nonfaculty staff provoked minimal interest among the faculty researchers and doctoral education programs which traditionally are at the heart of a major research university.

In late 1982, an ongoing effort was begun to integrate the programs of the Institute of Gerontology into the University mainstream of faculty research and doctoral education while continuing to honor the legislative mandate of the Institute to pursue research, education and public service of importance to aging. Strategy consists of the following four objectives: 1) to establish and to nurture at the Institute, in cooperation with select University units, the capability for faculty-directed, aging-related research in the behavioral, biological, clinical and social sciences and in the humanities; 2) to prepare qualified predoctoral and postdoctoral research trainees at the Institute for careers as independent investigators in gerontology; 3) to utilize its research accomplishments as motivation for the development and institutionalization of new academic programs in aging throughout the University schools and colleges; and 4) to utilize its relevant research expertise to influence the improvement of service delivery and development of public policy of importance to aging people and to an aging society. The accomplishments, difficulties and implications associated with each of these strategic objectives are summarized below.

Faculty-directed research. The entire agenda of the Institute of Gerontology since 1982 has been driven by the research of its faculty. In order to pursue this agenda with credibility, nothing matters so much as the recruitment of outstanding faculty investigators. Meetings between the newly recruited Institute Director in 1982 and the Dean of each School/College of the University identified potentially relevant academic departments. Subsequent meetings between the Institute Director and the chairperson of each potentially relevant department identified those units both willing and able to negotiate the joint recruitment of faculty investigators who possess mutually appealing credentials.

During the past eight years, nearly three dozen new faculty members were recruited to the Institute of Gerontology. Of these, fourteen relocated from other institutions and were given joint faculty appointments at the Institute and cooperating departments, whereas all others already were members of the University and extended their affiliation with joint appointment to the Institute. Joint recruitment of new University faculty at ranks of Assistant Professor through Professor with tenure entailed University cooperation with the Departments of Biological Chemistry and Internal Medicine in the School of Medicine; the Departments of Biology, History and Psychology in the College of Literature, Science and the Arts; the Departments of Health Services Management and Policy, and Community Health Programs in the School of Public Health; and the Center for Human Growth and Development. Joint faculty appointments at the Institute were extended to already existing faculty at ranks of Assistant Professor through Professor with tenure in the Departments of Biological Chemistry, Family Practice, Internal Medicine, Laboratory Animal Medicine, Neurology, and Physiology in the School of Medicine; the Departments of Physics, Psychology, and Sociology in the College of Literature, Science and the Arts; the Department of Community Health Programs in the School of Public Health; the Departments of

Mechanical Engineering and Electrical Engineering and Computer Science in the College of Engineering; the School of Nursing; the College of Pharmacy; the Department of Kinesiology in the Division of Physical Education; the Center for Human Growth and Development; and the Survey Research Center of the Institute for Social Research. Salary support and other resources provided to these faculty members by the Institute of Gerontology varied from individual to individual, ranging from no to partial or total salary, sophisticated laboratory facilities, and other discretionary support.

There have been three major difficulties associated with the establishment of this type of research program: 1) identification of primary intellectual thrust; 2) negotiation of viable administrative relations between the Institute of Gerontology and cooperating academic departments of the university; and 3) reaction to the necessary curtailment of formerly established priorities, programs and personnel in order to initiate and to nurture the new emphasis on research. It is impossible to embrace all aspects of gerontological research within a single university institute. However, a conscious decision was made to recruit the best researchers who collectively represent an approximate balance among the behavioral, biological, clinical and social sciences and the humanities. The substantive research interest of each individual potential recruit, for all intents and purposes, initially was regarded as irrelevant to the Institute. For example, the current array of faculty research interests at the Institute ranges from basic molecular genetics, to cognitive development, to metabolic problems of elderly people suffering from diabetes mellitus, to fiscal reimbursement systems for patients in long-term care settings, to comparative population aging in the U.S. and China, and so forth. Whether it becomes increasingly important for recent and future recruits to complement existing expertise and/or to add to the critical mass of developing interests represents an ongoing dilemma.

The most pragmatic determinant of a new intellectual thrust of this kind for a free-standing institute within a major research-oriented university probably is the ability to obtain and to maintain tenure track faculty appointments for those investigators whom the institute director hopes to recruit. At The University of Michigan, tenure resides in the academic departments of Schools and Colleges; not in institutes. On the one hand, this university policy provides the strongest possible mechanism of quality assurance for recruitment of new faculty members, and also integrates aspirations of the Institute of Gerontology into the mainstream of each cooperating academic department. On the other hand, the virtual hit-and-miss process of identification of those academic departments which are willing and able to cooperate adds a powerful element of serendipity to the eventual, collective research expertise achieved by joint faculty recruitment.

The manner in which each new faculty member is jointly recruited to The University of Michigan by the Institute of Gerontology and a cooperating academic department seems to vary at least somewhat with each individual case, although patterns of

negotiation and commitment are evident. Of the fourteen new faculty members who were jointly recruited from other institutions, the Institute and cooperating department are providing shared support for salary, office/research facilities, and/or other related activities for nine individuals. The remaining five individuals are supported entirely by the Institute, although three of the five are tenured with salaries ultimately guaranteed by the University Central Administration. Of the faculty members who extended their existing University appointments to affiliation with the Institute, salary support by the Institute was required for two, research facilities at the Institute were required for three, and office space at the Institute was required for eight.

A second important aspect of administrative negotiation between the Institute of Gerontology and cooperating academic departments is the designation of awardee unit for university crediting of external funding and related indirect costs. This, too, varies somewhat for individual faculty members. However, the Institute generally is designated awardee unit on those occasions when it provides the research facilities required for a particular grant. This occurs most frequently in those cases in which the principal investigator was jointly recruited from another institution. It occurs only occasionally in those cases in which the principal investigator held a prior appointment at The University of Michigan.

The only inflexibility encountered thus far, and by no means unique either to gerontology or to The University of Michigan, is the bookkeeping system of the university bureaucracy, which insists that a grant may be credited only to the single university unit in which the "primary" appointment of the jointly appointed principal investigator resides. The need not to credit the same award twice is sound accounting practice. Furthermore, the Institute of Gerontology most pointedly does not attempt to usurp control of those grants awarded to jointly appointed faculty members whose primary research facilities are provided by cooperating academic departments. However, the refusal by Central Administration of the University to provide elementary education to the pertinent computer generates a credit sheet which needlessly fails to acknowledge the progressively growing proportion of external funds that are generated by faculty members whose newly emerging research interests in aging result in joint affiliation with the Institute of Gerontology. On the one hand, it is the responsibility of the Institute to alert Central Administration to such trends. On the other hand, potential options for new fundraising by the University Development Office, as well as strategic opportunity for the Government Relations personnel of a public institution to sensitize the State Legislature to accomplishment of societal importance, are needlessly lost.

With the orientation of the Institute of Gerontology to a primary emphasis on faculty-directed research, begun in 1982, the former emphasis on Master's Degree programs and short-term training for nonmedical service providers and other professionals in aging was redirected toward a more appropriate home in relevant professional schools. It was replaced at the Institute by predoctoral and postdoctoral

research training in cooperation with various academic departments in the behavioral, biological, clinical and social sciences and in the humanities. The largest gerontological library in the world, with an overwhelming emphasis on books, monographs and newsletters which address social service and policy of importance to aging, was replaced by the primary need to refer to the modern periodical research literature of refereed journals. In 1989 the personal library of Dr. Nathan Shock, Founding Director of the Gerontology Research Center of the National Institute on Aging, was added to that of Dr. Wilma Donahue, Founding Director of the Institute of Gerontology at The University of Michigan, and was added to the collection of the Institute library in collaboration with the University of Michigan Libraries. The "constituency" of the Institute shifted from service providers, policy makers and advocates for the elderly to the research community, whose skills and interests are essential to the more fundamental understanding of aging. The annual line-item appropriation from the State Legislature, which since 1965 and until recently had been an unheard-of source of discretionary, "hard money" support for any academic program in gerontology, was voluntarily folded into the University General Fund by the Institute Director in 1985.

Fulfillment of each of two sets of expectations is crucial to the success of these efforts. 1) The Institute of Gerontology must be recognized as a research resource by the University community. A multidisciplinary center of excellence in research must develop into a focus of growing interest which attracts the intellectual attention of other faculty members throughout the university. This attraction must relate not only to specific research interests of new faculty recruits at the Institute, but also must create an environment which provokes new thinking about research in aging by faculty investigators who in the absence of the Institute probably would not have bothered.

2) A major shift in program scope from one that emphasizes facilitation of applied social research, advocacy and related professional training by a predominantly nonfaculty staff on behalf of a community service-oriented constituency to one that emphasizes the internal capability for multidisciplinary, faculty-directed research necessitates substantial reinforcement by the Central Administration of the University. Relevant issues include a sense of abandonment within service-oriented segments of professional schools and related community organizations; attention by faculty professional associations to severed academic relationships; and continued interactions between newly relocated, terminated professional staff and the statewide network of community agencies and organizations still of considerable value to a public institution of higher education. In this particular case, the especially capable and supportive University Vice Presidents for Academic Affairs frequently were called upon within and outside the institution for both diplomatic and more drastic actions.

Research training. The new agenda for educational activities housed at the Institute of Gerontology has been limited almost entirely to predoctoral and postdoctoral research training since 1982, at which time no such training had been underway at the Institute. The attraction of predoctoral and postdoctoral fellows rapidly followed the arrival of newly recruited faculty investigators.

The following kinds and numbers of research trainees currently are in residence at the Institute. Seventeen postdoctoral research trainees with PhD degrees and zero to five or more years of postdoctoral research experience and the intent to pursue careers as faculty investigators, represent the behavioral, biological and social sciences. Eleven postdoctoral research trainees are physician fellows in geriatric medicine who generally have completed residencies in internal medicine, who usually are without research experience, and who intend to pursue careers either in private practice or in academic medicine. Twenty-three predoctoral research trainees at the Institute are pursuing dissertation research in gerontology as part of graduate programs of the Departments of Biology, Biological Chemistry, Health Services Management and Policy, Kinesiology, Physics, Physiology, Psychology, Social Work, Sociology, or the School of Nursing. Sixty-two student research assistants at bachelors, masters and predoctoral levels are contributing to the research projects of Institute faculty members in various ways other than as part of a dissertation project. Finally, as the most recently established portion of an institutional research training grant from the National Institute on Aging, five Senior Fellows (one Assistant Professor of Anatomy and Cell Biology, one Professor of Psychology, one Professor of Public Health Policy and Administration, one Associate Professor of Natural Resources, and one Associate Professor of Electrical Engineering and Physics) are established investigators who are in residence at the Institute in order to expand their research programs into gerontology.

The research training program at the Institute of Gerontology comprises two distinct kinds of activities. The primary training experience consists of a research project for which the mentor is one of the members of the Institute faculty. In addition, all research trainees at the Institute are expected to participate actively in its Seminar Program, as follows: twice per month in discipline-specific presentations of trainee and guest investigator research in the biological sciences, behavioral sciences, social sciences, or geriatric medicine; once per month in a series of multidisciplinary presentations on research by Institute faculty members and guest investigators; and once per month in an intense discussion of an interdisciplinary research topic that is established in advance annually. Naturally, for predoctoral trainees these requirements are above and beyond those established by respective graduate programs of cooperating academic departments. The only significant difficulty associated with the research training program is the exciting, anticipated challenge to trainees and faculty alike to continue to honor the rigors of traditional disciplinary research in the rapidly growing awareness of the multidimensional nature of aging.

Academic program development in schools and colleges. The development and institutionalization of new academic programs in aging throughout the Schools and Colleges of The University of Michigan is one of the major benefits of the Institute to the University at large. The School of Medicine was the first of several University units with which the Institute planned cooperative program development related to aging since 1982. This was the case primarily because of the previous academic experience of the newly recruited Institute Director, as well as the Director's charge from Central Administration upon recruitment to expand the Institute program into the biomedical arena. It is essential to understand, however, that the original intent and the ongoing effort is to utilize the success of interaction with the Medical School as a role model for simultaneous and subsequent cooperative program development in aging between the Institute and other Schools/Colleges which require somewhat different types of strategy and structure. For the sake of expediency, this portion of the present paper will focus on the influence of the Institute of Gerontology on the development of academic programs within the School of Medicine. Similar efforts are at varying stages of development within each of the other Schools/Colleges of the University in which Institute faculty members maintain joint academic appointments.

Preliminary discussions between the Director of the Institute of Gerontology and the Dean of the School of Medicine identified the Departments of Biological Chemistry and Internal Medicine as primary targets for initial joint program development in the basic science and clinical departments, respectively. There was quick mutual agreement that establishment of credibility for a basic biomedical research program at the Institute must be viewed as prerequisite to successful development of academic programs of any kind within the Medical School, which at that time sponsored no scholarly activity in gerontology or in geriatrics. As the Institute research program in biomedical gerontology has developed since 1982, there has been a continuously growing contribution by the Institute to the launching of major new initiatives in basic research, graduate and professional education, and clinical programs in aging so that such activities now are institutionalized throughout the Medical School and University Hospitals.

Cooperative program development in the basic science departments of the Medical School began with the joint appointment of the Director of the Institute of Gerontology as a tenured full Professor of Biological Chemistry. Until that time, there had been no other joint faculty appointments between the Institute and the Medical School. Subsequent recruitment of institute faculty included one full Professor, one Associate Professor, and one Assistant Professor of Biological Chemistry, whose laboratory facilities are located at the Institute alone with those of the Institute Director, as well as one full Professor of Laboratory Animal Medicine, one full Professor of Anatomy and Cell Biology, and one full Professor of Physiology, whose

laboratories are located in their respective academic departments. This growing nucleus of biomedical research activity in gerontology at the Institute contributed directly to the successful application for numerous biomedical research grants in aging by established Medical School faculty members who previously never had considered the possibility of gerontological research. Of the seven predoctoral students from the Department of Biological Chemistry who currently are pursuing dissertation research in the laboratories of Institute faculty members, two are supported by stipends from NIH research training grants in Human Genetics and in Developmental Biology awarded to the Medical School. An even more recent research training grant in Molecular Biophysics was awarded to the School of Medicine and includes an Institute faculty member among its co-investigators. Since 1986 the Medical School has offered an advanced graduate course on the Physiology of Aging, taught by one of the Institute faculty members.

Cooperative program development in the clinical departments of the Medical School began in 1984 with the joint faculty recruitment of a physician scientist who serves simultaneously as Professor of Internal Medicine and Chief of the Division of Geriatric Medicine within the Medical School, as well as Medical Director of the Institute of Gerontology with laboratory and office space at the Institute. The Medical Director of the Institute is responsible not only for direction of his own research program at the Institute, but also for the coordination of medical research interests of all Institute faculty members with program development in geriatric medicine throughout the Medical School. The Division of Geriatric Medicine was established by the Dean of the Medical School as the primary focal point for School-wide activities in geriatrics.

A School of Medicine in which geriatric medicine did not exist as a scholarly activity as recently as 1984 has developed into a nationally recognized leader in the field as the direct consequence of a successfully developing, centralized program of multidisciplinary research launched late in 1982 at the Institute of Gerontology. The Institute of Gerontology and the Division of Geriatric Medicine initiated numerous joint efforts. Three additional physician scientists were jointly recruited with laboratory and office space located at the Institute and elsewhere. The Division of Geriatric Medicine recruited several clinical faculty members who direct a variety of ambulatory, in-patient and long-term care units for geriatric patients within the University and affiliated Veterans Administration Hospitals and community-based sites, and who also are jointly appointed to the Institute as Faculty Associates in order to facilitate human subject research by Institute faculty members. Most of the post-residency physician fellows in Geriatric Medicine are fully integrated into the research training program of the Institute, participating actively in seminars and pursuing research projects under the supervision of Institute faculty members. Physician and nonphysician faculty members of the Institute participate actively as coinvestigators and/or

facilitators on numerous externally funded research, training and center grants to the Medical School Department of Internal Medicine Division of Geriatric Medicine, Division of Endocrinology and Metabolism, Diabetes Research and Training Center, Multipurpose Arthritis Center, as well as the Departments of Family Practice and Psychiatry and the Mental Health Research Institute. Institute faculty members provide teaching lectures on the biology of aging for medical students and residency training programs. Three most recent major accomplishments of the Medical School in cooperation with the Institute include the establishment of a Geriatric Research Education and Clinical Center at the Ann Arbor Veterans Administration Hospital, designation by the State Legislature and University Regents as a Center of Excellence in Geriatrics, and also designation as the nation's first Geriatrics Research and Training Center by the National Institute on Aging.

There was only one difficulty of significance in cooperative program development between the Institute of Gerontology and the Medical School as a potential opportunity to participate in the development of a scholarly foundation from which to launch future clinical programs with enormous potential for substantial patient income. The challenge to the Institute Director was to negotiate an agreement which simultaneously assures the integrity of a new medical component of the free-standing Institute while satisfying the traditionally and appropriately expressed need of a medical school to control all scholarly and fiscal aspects of any program involving patient care.

The focal point of the eventual agreement was the faculty member jointly recruited as Professor of Internal Medicine and Chief of the Division of Geriatric Medicine in the Medical School, as well as Medical Director of the Institute. The Institute committed joint faculty appointments, laboratory and office space for the Medical Director and two to-be-recruited additional physician scientists, and necessary accommodations for related trainees and support staff. It was further agreed that the Medical Director is responsible for pursuit of external funding and program development in geriatrics through the division of Geriatric Medicine, as well as the coordination of medically related research by other Institute faculty members in conjunction with developing interest in geriatric medicine at the Medical School. The Department of Internal Medicine committed total salary support and the cost of all laboratory renovations and office expenses for these jointly appointed individuals. It was further agreed that above and beyond their appointments in the Medical School, these individuals be regarded in every way as regular members of the faculty and staff of the Institute.

It is essential to understand that the driving force which initiated this agreement and which must continue to assure the limits of its viability, is the exceptionally strong research credentials and productivity of the faculty members of the Institute. The likely emergence of a strong biomedical research component of the

Institute encouraged the Department of Internal Medicine to commit substantial new resources to an already modestly functioning, service-oriented Division of Geriatric Medicine, and enabled the recruitment of an appropriately credentialed physician scientist into a joint leadership role. The historically important legacy of a renowned Institute of Gerontology facilitated successful competition for new external support, program development, and additional faculty recruitment in geriatrics.

The Division of Geriatric Medicine at the Medical School of The University of Michigan now is sufficiently established to survive on its own as a center of excellence in research, education and care related to the elderly patient. For example, it is scheduled in the near future to secure its own laboratory and office space for those of its faculty, trainees and support staff who presently are located at the Institute. This is as it should be. It is the responsibility of every professional school to develop through its preferred mechanisms its own capability for research, training of new professionals, and delivery of relevant services of importance to every segment of its constituency, such as elderly people. It is the responsibility of units, such as the Institute of Gerontology, to facilitate such program development with utmost support and enthusiasm throughout the schools and colleges of its host university.

What is to assure the survival of the Institute of Gerontology if and when its scholarly substance develops and thrives in any or every School and College of The University of Michigan? The issues of aging are multidimensional. Virtually every academic profession and discipline has a stake in the pursuit and application of its understanding. No single academic profession or discipline encompasses its boundaries. The essential role of the Institute, and the inappropriate role of any School or College, is as the intellectual champion of interdisciplinary research by a multidisciplinary faculty whose disciplinary credentials continue to maintain not only credibility, but excellence among disciplinary peers. This is the best criterion and/or assurance for survival and enduring success.

Impact of research on public service. The appropriate balance between research and service at institutions of higher education is controversial. However, delivery of quality services and development of good public policies are dependent on the accurate and timely translation and application of good research. Therefore, the major research universities, and in particular the publicly supported ones, must assume the greatest responsibility for leadership in bridging the traditional gaps between research and service.

A centralized, university-based program of research on aging can be utilized to facilitate improvement of service delivery and development of public policy of importance to elderly people. The Institute of Gerontology honors this component of

its legislative mandate in part by recruitment of certain faculty members whose research interests specifically address service models and relevant public policies. Furthermore, all faculty members, and in particular the most senior and productive ones, are encouraged by the Institute Director to translate and to facilitate the application of their research as efficiently and as effectively as possible, as well as to participate actively on policy- and service-related advisory bodies at the local, state and national levels. Select examples of these types of activity at the Institute are as follows.

One of the most pressing, current, national issues of public policy of importance, at least to elderly people, is the excessive cost of long-term care for the chronically ill. The research emphasis of one of the faculty members of the Institute addresses the development of patient classification and financial reimbursement systems in long-term care settings. These efforts, in collaboration with colleagues from other institutions, are directly responsible for the design, implementation, and ongoing coordination and analysis of the current long-term care reimbursement system for the entire U.S. network of Veterans Administration Medical Centers, the State of New York, and elsewhere, as well as more recently funded efforts to establish a national assessment instrument for nursing home patients. Analogous efforts by other faculty members and staff of the Institute address comparative costs of home and community-based long-term care and institutional care, treatment and prevention of urinary incontinence, utilization of drug therapy reviews, management of patients with Alzheimer's Disease, development of nursing home community councils, and analysis of cultural factors which provoke the development of social security policies.

The most pressing, current, professional manpower need in aging is generally for health care providers who are trained in geriatrics, and in particular for physicians in geriatric medicine (Rowe et al., 1987). This is especially significant for the State of Michigan, which trained only three physicians in geriatric medicine until the Department of Internal Medicine and the Institute of Gerontology at The University of Michigan initiated their joint venture in geriatric medicine in 1984, as described above. Today, the Division of Geriatric Medicine at The University of Michigan is one of the few nationally recognized programs, and is the only formally established program in geriatric medicine in the State of Michigan. The usual annual level of physician training in geriatric medicine includes the following: twelve post-resident fellows; three residents per month from internal medicine; all internal medicine residents who have their weekly general medicine clinic at the Ann Arbor Veterans Administration Hospital are assigned patients in the long-term care component of the nursing home care unit; an elective geriatrics rotation for fourth-year medical students; and approximately 500 physicians participating in geriatrics training via University-sponsored continuing medical education programs throughout the State of

Michigan. Analogous efforts by other faculty members of the Institute include development of the Long-Term Care Track of the Master of Health Services Administration Program in the School of Public Health, and a specialization in gerontological nursing in the School of Nursing.

The research of certain faculty members of the Institute of Gerontology impacts directly professional concerns of international scope in aging. For example, people aged 65 years and older in the People's Republic of China, currently numbering fifty million, now make up five percent and by the year 2040 are projected to represent twenty percent of the population (Liang et al., 1986). Declining fertility and government-enforced reduction of average family size are likely to devastate the backbone of traditional old age support by the family network. Efforts by Institute faculty members to analyze sociological consequences of these population dynamics are attracting the attention of service agencies concerned with family planning and care for the elderly, as well as academic institutions and research organizations throughout Asia.

Finally, faculty members and staff of the Institute of Gerontology participate at the local, state and national levels on numerous advisory bodies of importance to public service and policy in aging. Select recent examples include the following: Chairmanship of the Veterans Administration National Advisory Committee on Geriatrics and Gerontology; consultation to the Congressional Office of Technology Assessment; nursing home reimbursement systems for each of several states, and the Health Care Financing Administration; membership on State Medicare Reform Task Force, boards of directors for local nursing homes and housing bureaus; and so forth.

The single, significant difficulty associated with such a public service component of a research-oriented program within a university is the constant external pressure on the relevant faculty investigator to produce above and beyond that which is valued most by the research community. The enormous public demand for utilization of a relevant piece of research in the context of short-term training materials, public appearances, technical assistance and consultation is both understandable and frequently difficult to resist. Entire careers may be established on translation, dissemination and/or application of a particularly useful product of research. Gerontology programs at numerous institutions of higher education, such as The University of Michigan prior to 1982, emphasize such an approach, and are extremely productive and useful as advocates for the elderly, as well as facilitators in the development and implementation of important service models and public policies.

The public service component of The Institute of Gerontology at The University of Michigan since 1982 emphasizes the doing of the service- and policy-related re-

search. Institute faculty and staff are encouraged to participate to some reasonable degree in relevant translation, dissemination and application of that research. Institute faculty and staff are rewarded primarily for the scholarly impact of published research papers in prestigious, refereed journals and books. Institute policy states that service- and policy-related training activities in aging, as well as delivery of care to the elderly, are the province and responsibility of the professional schools with which it is pleased to recruit jointly appointed faculty researchers.

Interdisciplinary Research

There probably are alternative approaches to the development of interdisciplinary research programs, although it is extremely difficult, if not impossible, to point with assurance to success stories. Ongoing efforts to build an interdisciplinary research program in aging at the Institute of Gerontology of The University of Michigan may provide significant insights into the identification of general principles. Thus far, the process includes three distinct steps: 1) recruitment and nurturing of a multidisciplinary faculty and pool of research trainees, all of whom are thoroughly committed to the discipline/profession in which they are trained; 2) active participation by these faculty members and trainees in structured cross-disciplinary communication and research; and 3) implementation of an educational experiment designed to crystallize the essential ingredients of interdisciplinary research proposals. This portion of the present paper summarizes the current status of each of these three steps.

Multidisciplinary recruitment. Recruitment of a multidisciplinary faculty with approximate balance in the behavioral, biological, clinical and social sciences and in the humanities at the Institute of Gerontology already was described in an earlier section of this paper. To reiterate the spirit of those remarks, such recruitment represents the conscious effort of the Institute Director to approach the breadth of research on aging, although in full recognition that no single program could encompass the entire field. The identification of individuals who are accomplished in and will remain committed to the traditional rigors of the disciplines in which they were trained is regarded by the Institute Director as absolutely critical to the recruitment process.

The quality of interdisciplinary research will be only as good as the quality of its disciplinary components. This is the reason why integration of Institute faculty into the mainstream activities of academic departments, such as through joint faculty recruitment, is so important to the Institute. Similarly, this is the reason why requirements of research trainees at the Institute are regarded by the Institute Director as above and beyond those educational requirements of cooperating academic departments and professional expectations of respective disciplines and professions. This is also the reason why the Institute sponsors four regularly scheduled, discipline-

specific, research seminars by faculty members, trainees and invited guests in the biological sciences, in the behavioral sciences, in the social sciences, and in geriatric medicine. Each faculty member and trainee at the Institute is required to participate actively in at least one of these seminar programs, all four of which convene separately two to three times per month. The occasional tension of conflicting demands by the Institute and cooperating academic departments on these faculty members and trainees is unavoidable and, when properly managed/negotiated, even healthy.

Cross-disciplinary interaction. Cross-disciplinary communication about aging at the Institute of Gerontology is achieved formally by means of an unusual, monthly research seminar. Lectures are presented by Institute faculty members and trainees, other faculty members from The University of Michigan, and eminent guest speakers from other institutions. Each speaker is instructed to address a multidisciplinary audience in a jargon-free manner. Every faculty member and trainee of the Institute is expected to participate actively by challenging the limitations of discipline-specific philosophy, design, methodology, interpretation and/or jargon. Audience and speakers regularly include biologists and physicians, psychologists and sociologists, clinical and policy researchers, and so forth, as described in more detail elsewhere (Adelman, 1986).

This seminar is an extremely exciting event, and is characterized in part by its informal atmosphere, free-flowing discussion, and attraction to progressively increasing numbers and kinds of faculty and students throughout the University of Michigan. It does very well at promoting a relatively superficial understanding by an extraordinarily diverse audience of the spectrum of research opportunities and controversies in aging. It greatly encourages discussion among scholars and students who rarely find the occasion to interact with one another about their respective research problems. However, such valued and exciting cross-disciplinary exchange must not be mistaken for more than a preliminary step in the direction of interdisciplinary research.

A key ingredient in the amplification of such cross-disciplinary exchange is the availability of sufficient discretionary resources to provide more than 30,000 square feet of permanent office space and research facilities, as well as formal opportunities to socialize with each other and with visitors, to faculty members and research trainees at the Institute of Gerontology. A critical mass of faculty investigators, their trainees and support staff are maintained continuously in a supportive environment which nurtures interaction by providing such resources in common as laboratories, library, conference and lounge space, computer facilities, administrative and secretarial support, and so forth. Such close proximity on a routine basis encourages a continuity and intensity of cross-disciplinary exchange that is not approachable when interaction is limited only to a regularly scheduled seminar of any design.

The interaction facilitated by this seminar program in such an environment has successfully accomplished cross-disciplinary research collaboration and cross-disciplinary research training at the Institute of Gerontology. One of several examples of successful program development in cross-disciplinary research in recent years is a newly discovered interest by one of the Institute sociologists in the well-being of elderly patients afflicted with arthritic disease. Prior to this particular revelation there had been mutual disdain by the sociologist for collaborative research with physicians and by the physician researchers from the Department of Internal Medicine for collaborative research with social scientists. Currently the sociologist is the Principal Investigator of a Special Emphasis Research Career Award and a regular research grant from the National Institute on Aging, respectively, to participate in advanced clinical training in arthritic disease and to investigate well-being in elderly arthritic patients in collaboration with physician colleagues in the Department of Internal Medicine, Divisions of Geriatric Medicine and Rheumatology. Furthermore, the same sociologist also recently was designated Chief of the Epidemiology Program of the Multipurpose Arthritis Center Grant awarded to the Department of Internal Medicine, and also is serving as a faculty research mentor to physician, post-resident Fellows from Rheumatology.

One of several examples of successful cross-disciplinary research training at the Institute of Gerontology is the completion of a full year of a traditional postdoctoral research fellowship by a physician under the mentorship of a social scientist. The intent of the physician trainee was to acquire sufficient methodological expertise to pursue a career as an independent investigator in both geriatric medicine and social science. This individual recently was appointed jointly to the faculty of the Department of Internal Medicine Division of Geriatric Medicine and the Institute of Gerontology at the University of Michigan.

Program development. Interdisciplinary research is the mutual commitment by the host institution and all members of a multidisciplinary team of investigators to the collective, sophisticated understanding of a particular issue in a manner which fully satisfies the traditional rigors and expectations of each of the participating disciplines. Interdisciplinary research is much more than sensitization to a common theme by individual investigators from diverse disciplinary and/or professional backgrounds. Interdisciplinary research is much more than a collaborative study of an issue of relevance to more than one discipline. The pursuit of interdisciplinary research always must be regarded as the consummation of ongoing disciplinary excellence in a multidisciplinary environment and always must avoid at all costs the sacrifice of that disciplinary excellence.

How, then, once a committed, multidisciplinary faculty is in place in an institutionally supportive environment does one establish an agenda for interdisciplinary research? In a novel attempt to grapple with this unresolved issue at the Institute of Gerontology, a specific, multidimensional component of research on aging is selected annually for year-long, intensive, regularly scheduled group analysis by the entire Institute faculty and all trainees. The topic selected for analysis during the current year at the Institute is the assessment of physical and mental capabilities and potential in geriatric patients. Measurement of disability, for example, will be of increasing importance as people live longer while developing chronic illness (Feinstein et al., 1986). More than 1000 indicators of functional disabilities already are applied to the determination of compensation, prediction of prognosis, placement of patients within the continuum of care, indications of changes in status, and so forth. Such measurements utilize arbitrary rating scales, and may involve patient capability for acts of daily living, work, hobbies, and psychosocial relationships, as well as the range of human variabilities which characterize those who obtain the measurements. It is anticipated that true interdisciplinary investigation of this topic may yield more sophisticated understanding of an application to afflictions of the elderly than presently is possible. Such an accomplishment is of particular importance to the Institute since one of its faculty members recently was awarded the contract to develop the national nursing home assessment system for the United States.

A multidisciplinary committee appointed by the Institute Director is charged with designing an interdisciplinary program that includes careful examination of relevant research literature, seminar presentations by Institute faculty members, and visits by prominent guest investigators. The ideal criterion for success in this experiment is the eventual articulation of a specific research proposal which satisfies the rigors of the participating disciplinary paradigms, which is awarded external funding by peer review, and for which experimental data are published in one or more prestigious, refereed research journals. Presumably, as such a process is repeated for a series of annually selected research topics, it eventually may be possible to express general principles for the design of interdisciplinary research.

Conclusions

The inclination of institutions of higher education to commit internal resources to development of research programs in aging generally was regarded as venturesome as recently as in the 1960's and 1970's. Today, the absence of such a commitment is a somewhat dubious distinction, and in the near future probably will be regarded as anti-intellectual, foolish, and irresponsible. Demographic projections of population growth based on already living people indicate that within the next twenty years nearly twenty per cent of the U.S. population will be older than 65 years, that the most rapidly growing segment of this population is 85 years of age and older, and

that the onrushing demographic explosion will be even more dramatic in more populous regions of the world such as the People's Republic of China. As increasing numbers of people live in good health to older and older ages, the very fabric of our society is undergoing profound change: from concepts of employment, retirement and social security, to issues of political strategy, product design and marketing, intergenerational relations, classroom composition, and ethical behavior.

Aging impacts virtually every academic discipline and profession. The challenge and opportunity for new program development in aging is enormous throughout and beyond the schools and colleges of universities. The Gerontological Society of America, the major scientific society in aging, boasts a growing membership at a current level of nearly 7000 researchers in the behavioral, biological, clinical and social sciences and in the humanities (GSA, 1988). The National Institute on Aging, the primary source of funding for research on aging, operates on a growing annual budget at a level of \$222,643,000 for fiscal year 1989 (NIA, 1988-89). Research by the faculty of the Institute of Gerontology at The University of Michigan is supported by current annual direct costs in the amount of \$13,000,000 from an extremely broad spectrum of public and private agencies (Institute of Gerontology, 1988-89).

Finally, the personal perspectives presented in this paper should be savored with a sensitivity to each of at least the following three confounding factors.

1) It may be fairly easy to accomplish what is happening at The University of Michigan Institute of Gerontology because the Institute Director acts within a major research university that long has promoted multidisciplinary endeavors. There is great precedent for innovation and considerable encouragement by the central administration. Is the Michigan experience easily transferable elsewhere and, if so, what steps should someone take? Instinct encourages the speculation that the identical conceptual approach will generate as much success, although with a likely differing substantive mix of gerontological activity, in any institution with the same high value for research and commitment of discretionary resources and authority.

2) Most of the presented illustrations relate to the health sciences. This is hardly accidental, given the predilections of the Institute Director, current strategies of the University, and current federal funding priorities. Will this trend persist and/or will the social or behavioral sciences capture a greater share of rewards in the future? Successful research program development in aging at an institutional level today and into the foreseeable future requires a major intellectual investment in health-related problems of elderly people. For the most part, although by no means entirely, the behavioral and social sciences need to adapt their *raison d'être* to health-related mores and perspectives in order to secure their share of the available pie.

This current biomedicalization of aging (Estes & Binney, 1989) is rampant, reflects the rapidly growing prominence of geriatric medicine, and inappropriately emphasizes basic and applied research on afflictions of old age at the expense of fundamental understanding of aging in the absence of disease. The pendulum inevitably will swing back to a more balanced position if and when the social, behavioral and biological sciences in aging better assert themselves, as expressed in terms of higher quality research which embraces processes of aging in the absence of disease, the potential for mental and physical performance in healthy old age, and the societal impact of population growth by that healthy segment of people who are 85 years of age and older. Encouragement and facilitation of these kinds of research at The University of Michigan are among the highest priorities of the Institute of Gerontology.

3) Institution building takes time. Recruitment of a talented and committed core faculty in an appropriately supportive environment is only the first step. Crucial interactions—be they serendipitous and/or by design—do not take place immediately. At The University of Michigan the investment in the School of Medicine bore substantial fruit after approximately five years. Several other Schools and Colleges of the University already are at formative stages of development. In the same period of time, cross-disciplinary interaction has gained acceptance, but is by no means the general rule. Interdisciplinary research, as defined in this paper, is an intellectual aspiration, but still significantly distant from accomplished reality.

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The Third University Mission: To Serve Older Adults

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Suddenly, one-fourth of our nation is to be composed of an age group (those 55 and over) that was fundamentally nonexistent in 1776. In 1776, the average lifespan was only 35 years. Rand Corporation predicts that the average person born in the year 2000 will live to 94!

This demographic sea-change demands the intense attention of the entire nation, especially colleges and universities. The university's opportunity/responsibility encompasses all three roles: teaching and instruction, research and discovery, and public service. Pursuit of the university's third role, public service, is the focus of this essay. The first section elaborates the character and urgency of the needs. Section two identifies ten aspects of "university service." The third section uses the typology developed in section two to present a "checklist" of programs and policies for university leaders who wish to explore more ways to serve an aging population.

A Symbiotic Need

Today's America needs productive person-power. Older adults need meaningful activity. Universities need resources. Upon this symbiotic coincidence rests my "philosophy" of the university's **service** response to an aging America.

What society needs from older adults is productive work, both volunteer and paid.

Manifest in tax deductions for charitable contributions, private foundations, lay boards heading virtually all colleges and social agencies, and the comparatively restricted role of government, volunteerism has been and is a major force shaping our society. Yesterday's volunteer force of "housewives" has been decimated by women entering the workforce. Suddenly missing are millions of volunteer hours put in by capable people.

To the rescue comes America's newest age group—retirees. These tribal elders are our most experienced, most knowledgeable, most wealthy, and most underutilized citizens. People over 55 own 77 percent of the nation's wealth, 80 percent of

the nation's Savings and Loan deposits, and 78 percent of the money market funds. By social security and pensions, by handicapped legislation and technology, by medical and insurance breakthroughs, and by the happenstance of the birthing cycle, this legion of elders has largely been freed, at least in part, from the necessity of income-generation and is, consequently, available for voluntary work. Over 80 percent of all retirees are mentally and physically capable of handling a full-time job. The "average" retiree has at least a decade of independence, a decade when "normal and full" contributions can be made to society.

The American advantage in world commerce may well rest upon our effectiveness in utilizing older adults, both as volunteers and paid workers. Today's ratio of workers-to-retirees of five-to-one will fall precipitously to two-to-one in 2030. By enabling and encouraging the use of these talents, universities can provide an immense service to society.

Fortunately we face a win-win situation. What is needed by the country fits well with the need of retirees. Three important losses upon retirement are (1) identity, (2) networks, and (3) activity. Job title and employer are major identifiers, often the first information shared with new acquaintances. Even in retirement many keep their labels, using business cards such as Professor Emeritus or Formerly Vice President for Marketing of the XYZ Corporation.

Often missing in retirement is the activity that defines the retiree as a productive citizen and the title that doubles as a quick identifier. Also lost is the network of friends and acquaintances that naturally accompanies many jobs, a major source of personal support and learning. (Thomas H. FitzGerald, a former corporate executive, captures the emotion of these losses in a wonderfully written essay, "The Loss of Work: Notes from Retirement," *Harvard Business Review*, March 1988.)

Needed are opportunities to serve productively. Needed is a new identity with a cause of an organization or an activity. The hard-earned afternoons of golf are cherished, yet without sacrificing the golf, retirees seek a fuller, balanced life of productive activity. They seek a "replacement for work" even as they expand leisure activities.

The trick is for the institutions that need person power to reshape jobs to fit the preferences of retirees. People continue to retire at an earlier and earlier age because they don't want to do certain kinds of work or to belong to certain kinds of organizations. They want flexibility, autonomy. These features must be structured into the jobs.

Finally, what is needed by the country (productive service) and by retirees (productive opportunities) fits well with university needs. From active retirees universities

can gain intergenerational diversity in degree-credit classes, wise advisors of departmental honoraries, professors for team-taught courses, a fuller spectrum of skills on research teams, access to corporate recruiters and instrumentation and grants (via contacts with previous employers), personal gifts and bequests (often matched by former employers), expert advice on boards and advisory committees and, most of all, a talent bank that can help the university pursue all aspects of its mission.

By providing productive opportunities for older adults, universities simultaneously enlarge national productivity, enhance the university's mission, and enrich the lives of seniors. That is, indeed, a win-win-win situation and it provides the rationale for the suggestions that follow.

Opportunities for Public Service

A conceptual framework for brainstorming ways in which universities can best serve an aging population is provided by Brown's Typology of Public Service Opportunities. Intended to encompass all kinds of university public service, for all groups and all causes, this generic typology is explained in this section and, in the next section, is related specifically to the aging population.

"University Public Service" refers to all university activities that benefit individuals/groups/societies except learning and research for its own sake. The personal gain of a degree credit student is normally excluded, as is the theoretical research without practical application. This leaves a broad range of university contributions through Public Service, specifically:

1. **As educator.** Graduates of universities serve society as well as self. They vote, manage, create—and they do so with fuller knowledge and broader perspective. Also, through teaching, universities "certify" the "intellectual capacity and maturity" of graduates to employers and others. Teaching undergraduates in degree credit classes is a public service of immense significance.
2. **As trainer.** Graduates of professional programs are lawyers, doctors, engineers, social workers, etc. Alumni of university programs often return for refresher courses, for retraining, for additional training.
3. **As entertainment provider.** Concerts, lectures, athletic contests, arts/crafts "courses" and museums draw hordes of participants to campuses throughout the country.
4. **As inventor.** By facilitating teaming among specialists, and by providing an environment that physically enables and spiritually relishes discovery, universities are constantly advancing the frontiers of knowledge.

5. **As consultant/resource pool.** Much like Noah's Ark, universities enable a community or region to have in residence a specialist of virtually every variety. These specialists member numerous voluntary boards and advisory committees and are available for hire on special assignment. Universities are a "neutral" employer of super-specialists who can, in turn, be hired for specific tasks by a number of companies.

6. **As applied researcher.** Governmental agencies, foundations, and interest groups often contract with university professors to solve specific problems or analyze specific issues. Often professors prototype and evaluate new, practical uses of theoretical knowledge.

7. **As program prototyper.** University presses publish books that are commercially risky. Likewise, university laboratory schools test new educational practices. Institutes of Urban Affairs experiment with new committee/commission forms.

8. **As network facilitator.** Because universities span the spectrum of knowledge, people with specialized interests often find each other through university specialists. For example, people interested in 19th century England find each other via attendance at special lectures, environmental advocates find each other through relating to the Department of Environmental Science, internationalists find each other through a particular professor with international expertise.

9. **As public utility.** Most universities provide local access to books and journals, to specialized computer facilities, to sophisticated scientific instrumentation, to elaborate physical education facilities, to a park-like atmosphere and use.

10. **As critic and clairvoyant.** Universities are marketplaces for ideas. Free thinking is encouraged. Questioning conventional wisdoms and established practices is honored. Universities serve society by being friendly, in-house critics.

These ten types of public service contributions together provide the justification for our society investing billions of dollars in its colleges and universities. Whether public or private, America's colleges and universities are primary institutions of public service.

A Checklist of Public Service Programs for an Aging Population

As the population ages, university and college leaders might wisely contemplate the range and intensity of their public service commitments to our aging population. This list is presented as a thought-catalyzer, as an opportunity for higher education leaders to "assess" what they are doing, and what opportunities/responsibilities they are missing.

1. As an educator

- a. Does the undergraduate curriculum prepare students to cope with an aging population?
- b. Is there a "general education" major/minor in gerontology?
- c. Do you sponsor degree programs that are sought by older adults, e.g., Masters of Liberal Arts?
- d. Are regular degree credit offerings structured to accommodate the constraints of most older adults, e.g., daytime offerings, minimization of library reserve material, concentrated time frame to allow for travel?
- e. How is the availability of these programs marketed to older adults?
- f. Are you offering special workshops and non-credit courses on issues relating to the aging such as the spend-down phenomenon or the Sandwich Generation?
- g. Do you offer seniors tuition-free enrollment in classes on a space available basis?
- h. Are you offering Elderhostels?
- i. Do you include plays about seniors, lectures on senior topics, art exhibits with senior subjects in your co-curricular programming?

2. As a trainer

- a. Have you considered "aging subspecializations" within majors such as recreation, political science, sociology and social work, financial management?
- b. Are you providing continuing professional education for the many networks of aging professionals?

- c. Do your continuing professional education courses for other groups, e.g., accountants, lawyers, and doctors, include a "curricular unit" on aging or older adults?
- d. Are your professional degree programs large enough to meet the high prospective demand for aging professionals?
- e. Are there sufficient certification and "skill upgrading" opportunities for the huge corps of care deliverers who are not currently required to be trained professionally and yet who provide the majority of in-home health care providers in your area?
- f. Is there a need in your area for a home base for a "network of aging professionals" or a "clearing-house" of training programs available?

3. As special event provider

- a. Are you publicizing events through the seniors' networks, e.g., AARP, senior newsletters, senior centers and retirement communities?
- b. Do you sometimes sponsor public lectures, concerts, sporting events and plays with the intention of drawing an audience of seniors?
- c. How about listing the "plenary lecture" in your core course for freshmen as the "Monday Morning Lecture Series" and allowing seniors to sit in on the class as auditors?
- d. Is there adequate access to your performance facilities, e.g., nearby handicapped parking or special seating? Do the facilities themselves adequately anticipate special needs such as a first aid station, limited stair climbing, avoidance of glare and slippery surfaces, aids for the hearing impaired, and adequate restrooms without walking long distances?
- e. Is your continuing education program catering to the seniors market?
- f. Do you offer senior citizen discounts?

4. As inventor

- a. Are you encouraging the formation of interdisciplinary research teams around aging themes? Have you published a campus-wide list of interests in aging research? Do you have some type of interdisciplinary committee to share information about what's happening around campus?

- b. Does a Center for the Study of Aging make sense in your environment? Who are the champions who might initiate such a center?
- c. Thinking of the arena in which you are doing frontier research, are there logical avenues for extending the research into the aging field?
- d. Have you widely distributed *National Guide to Funding in Aging?* (Long Island University, Nassau County Department of Senior Citizen Affairs, The Foundation Center)
- e. Is the aging research that is taking place on your campus receiving adequate publicity?
- f. Are your researchers who subdivide populations by age continuing to subdivide above the age of 65 in order to reflect the extreme diversity of older adults?

5. As an applied researcher

- a. Have you formed an advisory committee of professionals from agencies and businesses serving retirement agers and of retirees to suggest research topics and local service needs?
- b. Are you testing older adults? Are you structuring and using the data from testing older adults to explore research hypotheses?
- c. What are some of the major problems facing older adults in your community, region or state and how can your university help to move toward overcoming the problems?
- d. How about convening symposia on issues of greatest concern to older adults, e.g., long-term care, intergenerational equity, the economic implications of retirement migration?
- e. Are your people building a data base about the local/regional senior population that can assist local service providers?

6. As consultant/resource pool

- a. Have you compiled and distributed a guide to the individuals on campus who are doing scholarly work in the field of aging and the character of that work?
- b. How can you encourage faculty members to serve on boards of voluntary agencies that deal with older adults?

- c. In what ways is your university helping to inform and shape state and federal policy toward older adults?

7. As a program prototyper

- a. Do your employment policies/practices make it easy for older adults to work part time, during hours that are convenient to them? Are you employing your own professors emeriti? Why not locate retired executives for short-term, interim appointments and for special projects?
- b. How about starting a model program in "adult fitness" or "grandparenting" or "seniors volunteering in the community" or whatever, with advance planning to turn over the administration of subsequent programs to other agencies, e.g., senior centers?
- c. Are there programs involving senior volunteers that can be prototyped, e.g., senior docents at the university's art museum?
- d. Is it possible to design university facilities, e.g., a conference center, so that they are "senior friendly," e.g., with convenient parking, slip resistant flooring, short walks, large signage, reduced glare?

8. As network facilitator

- a. Is there a facility that can serve as a "seniors' lounge" or "retirement center," a place where older adults who have interests related to the university can come together to meet one another?
- b. How about forming "interest organizations," e.g., a World Affairs Council for people of all ages as a congregating point for retirees with international interests/experiences?
- c. Are your departments and disciplines maintaining the names and addresses of people in the community who have training and interest in the field?

9. As a public utility

- a. How convenient is it for older adults to gain access to the university library, to the computer center, audiovisual technical services, fax and copying machines, research laboratories and scientific instrumentation?
- b. What facilities can be made available to seniors, on what basis? Are there logical "senior hours" at the university's golf course? Is there a time when the

swimming pool and/or weight room can be made available? What about assessing the university's indoor track for a heart attack recovery program?

- c. Can the university serve as a testing site for older adults pursuing their personal fitness program, e.g., by periodically sponsoring cholesterol tests or the Cooper Fitness Test?
- d. Can job titles and letterheads be legitimately assigned to specific seniors for the purpose of enhancing their identity?
- e. Can you provide housing/staff for one of the many national or state associations that serve older adults and professionals that serve older adults?

10. As society's critic and clairvoyant

- a. What existing social policies, from child care to social security, will need to be altered in anticipation of the Age Wave?
- b. Which policies are working for non-seniors that will not work for seniors?
- c. How can the university disseminate the message that the population is aging and all must prepare for its consequences?
- d. What inventions can the university encourage to cope with the demographic sea change?

Conclusion

As educator, trainer, entertainment provider, inventor, consultant/resource pool, applied researcher, program prototyper, network facilitator, public utility and critic/clairvoyant, universities throughout the country, each reflecting its own circumstances, are destined to make very diverse responses to the opportunities and obligations of an aging population.

Some universities will simply respond by accommodating to the increasing percentage of their instruction that will be provided to lifelong learners. Others will venture on with programs especially crafted to the persuasions and constraints of retirees.

Universities have regularly been challenged—by the space age, by discrimination throughout society and by crises in the public schools. We can expect that universities as a whole will once again respond to meet the challenge!

APPENDIX

The North Carolina Center for Creative Retirement

To aggressively pursue answers to the checklist-like questions, with the help of a continuing \$100,000 grant from the North Carolina Legislature, the North Carolina Center for Creative Retirement was founded at the University of North Carolina-Asheville (UNCA). The Center now occupies a small suite of offices and a specially decorated and dedicated class/seminar room. Permanent housing for the Center for Creative Retirement is underway. It will be a \$15 million conference center designed specifically to accommodate the needs of older adults.

Informed by three advisory committees (a steering committee of program directors, some of whom are departmental faculty members, a "local advisory committee" of influential and insightful seniors, and a National Advisory Committee of professionals in the field of aging), the Center is developing 10-12 distinct programs all around the theme of Senior Productivity. Because UNCA is in the heart of one of the nation's more popular areas among young and active retirees, there is a total university or all-campus focus upon older adults. Several programs of the Center are described below as an example of one university's response to its service mission.

Retirement Issue Forums, with participation by national experts, have been held, the first of which addressed Intergenerational Equity and focused upon a mixed audience of seniors and undergraduates. The second was on Retirement Migration: Boon or Bust and drew economic developers from eleven states. Both of these forums have focused local and national attention on particular aspects of the aging population.

UNCA's College for Seniors is in its second year. This membership college (\$75 per semester) offers unlimited enrollment in eight different half-day, once-per-week courses that run for six consecutive weeks. All courses are rigorous and substantive—19th century novels or Modern Scientific Developments or The United States in World Affairs, not how-to-do-it or how-to-invest or arts and crafts. Instructing these courses are both unpaid retirees and paid university faculty. Supplementing the courses are bag lunches with professors, trips to special museum exhibits and privileged access to the library and computer center and instrumentation of the campus. In both semesters, the College has had to close enrollment at approximately 200.

Pre-retirement seminars are provided to state employees and, on a contract basis, to the employees of other corporations and businesses. (The Center's program is based upon the National Council on the Aging literature.)

Responding to an initiative from the Center's Retirement Enterprises Council, the Asheville Chamber of Commerce has a special division relating to retirement industries, and one of the emphases in business recruitment is upon this sector.

At the core of the Center for Creative Retirement is the Retirement Research Institute which specializes in analyzing the effectiveness of programs for older adults and upon program evaluation.

Faculty from the Retirement Research Institute have played a key role in advising the North Carolina Governor on aging policy (1988 was North Carolina's Year of the Older Adult), the North Carolina Division on Aging regarding retirement migration, and in helping to organize a statewide conference on the retiree.

Higher Education in an Aging Society: A Data Summary

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Fewer babies, better health, and longer life. American society as a whole is growing older as a result, and this aging of our population will have profound implications over the next two decades, in the workplace and elsewhere. The huge bulge in our population, known almost affectionately as the "baby boomers," will move into the 45-65 age bracket. Their presence, combined with the continuing shift of the economy from manufacturing to services, may well change the structure and organization of work for these older adults. Particularly intriguing is the possibility that these changes over the next twenty years may have a significant impact on our system of higher education and training as well.

Age

What are the facts? Today, over 75 million Americans are 45 years old or older. Of these, 23 million are aged 45-54, another 22 million are 55-65, and 30 million are 65+. By 2010, just over twenty years from now, there will be 117 million people who are 45 or older, an increase of 42 million older adults in our country (U.S. Department of Commerce, 1984). In 1970, the median age of the U.S. population was 28. By 2010, the median age will be 39. More than one quarter of all Americans will be at least 55 years old, and one in seven Americans will be at least 65 (U.S. Senate, 1986). Truly, our society will be aging.

The workforce will be getting older too, of course. In 1985, over 32 million workers, nearly one-third of the total work force, was aged 45+. Nearly as many women were working as men, although more minority women than white women aged 45+ were working. Over the past 35 years, labor force participation rates for older men have dropped, while rates for older women have increased. Men have been retiring earlier, but women, at least up to age 65, have not (American Association of Retired Persons, 1986a). In fact, the total number of working women has tripled since 1950.

Older Workers and the Changing Workplace

While older workers today are found in every occupation in the U.S. economy, the greatest number of them are in two broad areas: (1) technical, sales and administrative support, and (2) managerial and professional specialties (AARP, 1986a)

But the Bureau of Labor Statistics (BLS) projects that the labor force in the year 2000 will look quite different than it does today. First, there will be at least 21 million more workers. Second, BLS foresees fewer younger workers (because there will be fewer of them in the total population), and more middle-aged workers (to age 55—lots of baby-bomers here). BLS predicts there will be fewer workers 55 and over because "their labor force participation rate will continue to decline, even though the population of their age group will increase." (Abramson, 1987, p. 8) There is, however, some debate about this last projection.

Women, Blacks, Asians and Hispanics will make up a larger share of the labor force. Due to the changing demand for goods and services, the service-producing sector will provide 20 million new jobs, while the goods-producing sector will remain level. Two parts of the service-producing sector, services (health, business, legal, education, social, and other) and retail trade will provide 75% of the job growth projected by 2000.

Implications for Higher Education

As our society ages over the next twenty years and the demographics of the workforce and the work done change, what are the implications for higher education? BLS and others argue that the projected growth of the broad occupational groups shows the increasing need for education. Workers with more education also earn more and are less likely to be unemployed (Abramson, 1987, and Howe, 1988). Occupations in which a large proportion of workers have college training are projected to be among the fastest growing, while jobs where most workers have less than four years of high school are expected to be among the slowest growing.

Labor Department analysts also point to the danger inherent in these projections faced by minorities. "Although Blacks and Hispanics are employed in virtually every occupation, they are more heavily concentrated in certain occupation clusters. In general, the (BLS) data show that both Blacks and Hispanics account for a greater proportion of persons employed in the occupations that are projected to decline or grow more slowly than in those occupations that are projected to increase rapidly." (Silvestri and Lukasiewicz, 1987, p. 62) These analysts go on to suggest that "... the data imply that improvements in education attainment are important if Blacks and Hispanics are to take advantage of the favorable job opportunities associated with these rapidly growing occupations." (Ibid)

The Education of Older Adults Today

The education gap between older and younger persons has been closing in the last several decades and is projected to continue to do so in the future. In 1985, according to Census data, about 35% of those aged 45-54 had attended at least some college, compared with 30% of those aged 55-64, and 20% of those 65+ (U.S. Senate, 1985). Yet over half of all people over the age of 50 now have not finished high school and nearly half have limited reading ability (American Association of Retired Persons, 1987). The Federal Government estimates that 20 million workers do not have the basic skills to compete for future jobs. "The future economy will not be forgiving of the poorly prepared," said then Labor Secretary Ann Dore McLaughlin in a speech calling for literacy audits to be conducted in business and industry (Swoboda, 1988).

Many Americans today do recognize the need for continuing and adult education to improve job skills, move up to more responsible positions, or even change careers. According to a new College Board study (Aslanian and Brickell, 1988), about one out of every 25 adults aged 25+ has studied for college credit in a given year. Such adults can be found in about one out of every 15 households. The Department of Education's Center for Education Statistics reports that in 1984, 23 million adults participated in 11 million adult or continuing education or non-credit courses, 10 million courses or educational activities given by an employer, labor organization, neighborhood center, church, or community group, 6 million courses for credit as part-time students, and 4.5 million correspondence and other courses and organized educational activities. Two-thirds of the adult education was taken to get a job or advance in a job, according to the participants (Hill, n.d.).

Women made up the majority (55%) of these adult education students. Adults studying also tended to be white (92%), college-educated (62%), and already employed (81%) with above median family income (65%). Of the 23 million participants, approximately 25% were aged 45+, a total of over 5.8 million older adult students in 1984 (Ibid).

While the percentage of courses for college credit (versus non-credit) taken by adults has declined in recent years, the primary providers of adult education are still schools. Over 80% of the school-based courses taken by adults in 1984 were offered by universities, two and four-year colleges and vocational, trade or business schools. But higher education's share in the education of adults has declined since 1969. That year all types of schools (including some elementary/secondary) provided 63% of the adult education courses taken. By 1984, that share had dropped to 52%. Who is the rising competition? Business and industry, community organizations, government agencies, labor and professional organizations, and even tutors and private instructors all have increased their education and training offerings dramatically. And who paid

for all this education? Participants and their families paid for 47% of the courses (down from 57% in 1969), while employers paid for 36%, public funds from various sources sponsored 15%, and 2% of the courses were paid for from other sources. In 1984 adults spent \$3 billion for their education courses, and that figure does not include the amount spent by other supporters, which is not known.

A number of higher education programs focus especially on older adults. Perhaps the best known is ELDERHOSTEL, an educational program sponsored by colleges and universities all over the country and abroad which offers inexpensive, short-term academic programs. In 1987, over 140,000 people participated in these programs located in more than 1,000 different higher education institutions. Another group encouraging such learning is ALIRO (the Association of Learning in Retirement Organizations) which is made up of membership groups that seek to nurture daytime college-level study and learning aimed at the retired and semi-retired community. The educational offerings are developed, designed and taught by the members themselves with the cooperative sponsorship of a college or university. There are an estimated 75-100 such organizations in existence today (Meyers, 1987). In addition, 123 college centers for older learners have recently been identified in a survey by the American Association for Retired Persons (Institute, 1987).

Education of Older Adults in the Future

Looking ahead in the next twenty years, it appears that continuing education will need to be an even greater priority for our society. The American Society for Training and Development (ASTD) estimates that by the year 2000, 75% of all workers currently employed will need retraining. Already big business, ASTD says that today \$180 billion is spent annually on adult job-related training, with about 70% of all executive, professional and technical workers retrained at some point. In a recent report (ASTD, 1986), the organization notes the changing demographics of the work force as the baby-boom generation ages. The result, says ASTD, will be a larger number of mid-career and older employees, along with a shrinking labor pool at the entry level. Older employees, too valuable to let go, will need retraining for the new information age and a service economy.

Some efforts to retrain older workers are already underway. In a survey based on a Gallup Poll, the American Association for Retired Persons (1986) found that two out of three workers 40 and older reported receiving some type of job training within the previous three years, typically on-the-job training provided by the employer and intended to upgrade job skills. Workers age 63 and over, those with lower incomes, less education, lower-level jobs, and those employed by small firms and in the private sector were less likely to have received training. More than four out of five of these older workers expressed a wish for training opportunities.

Despite the demand for increased adult educational opportunities in the coming years, it is unclear now what role our higher education system will choose to play in these continuing education and retraining activities. At present, college enrollments are up and nearly half of all the students in higher education today are over age 25. Will the trend of more and more older students returning to colleges and universities continue? Will the changing nature of the workplace in the next two decades encourage more people to continue their education in schools or will workplace-based training conducted by the companies themselves become paramount? How will the education or training be financed? Will new alliances be necessary among higher education groups, organizations representing the interests of older adults, and business and industry interested in educating an aging workforce? Some of these questions were addressed by the papers in this volume.

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